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and Sanitary Engineer of Canada

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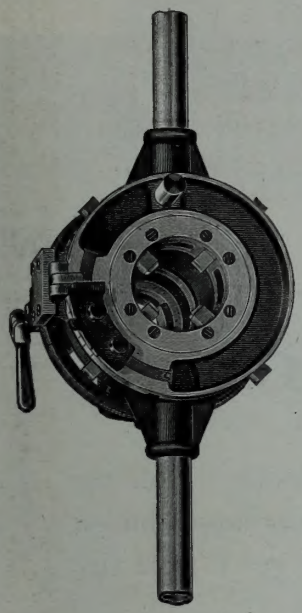

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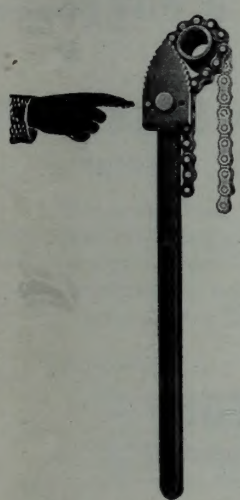

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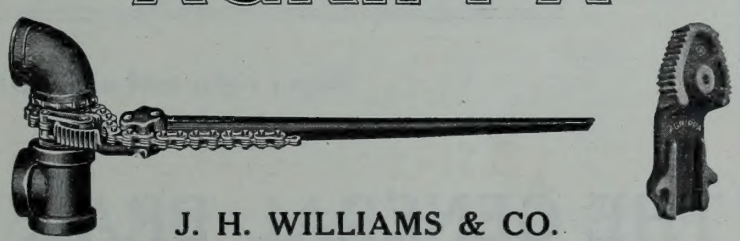

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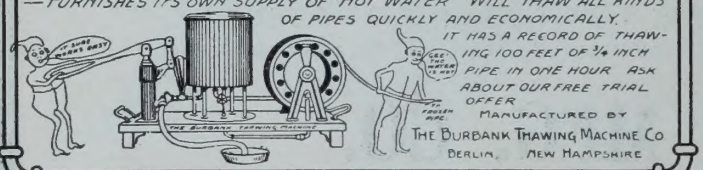

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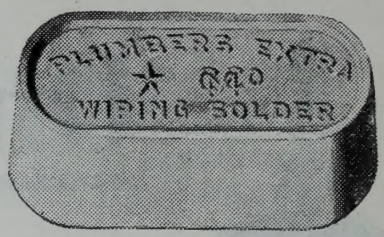

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MONTREAL, TORONTO AND WINNIPEG, JANUARY 1, 1909

BE ALIVE TO EVERY OPPORTUNITY.

Are you one of the plumbers who have been doing a lot of grumbling all year about prices, lost jobs, and unsatisfactory profits ?

Probably you have been thinking that trade conditions were worse with you than with any one else—particularly with your trade than any other.

Have you ever looked around your town—fully realizing that your sphere of work is as essential to human comfort as any other—and noticed whether you are keeping as fully abreast the times and march of progress as other business men ?

Have you been as alert in bringing before every possible customer all the different types of the most up-to-date goods that you could place before them ?

Or have you simply told the prospective customer when he called that if he wanted such and such goods probably you could furnish them ?

Have you tried to create a desire among your possible customers for better material, better fixtures, better work, or have you instantly talked price and price only ?

To sell goods is to first create the desire, and price is a secondary consideration.

Have you tried to make your place the most representative and progressive place of its kind in your town ?

Have you noticed how the druggist, the grocer, the gents' furnisher, the barber, and the butcher lights up his place at night, arranges his goods in the most attractive manner possible and yet the volume of business he does is not near what the possibilities of your own business could be made ? Goods well displayed and courteously explained is more than half the battle.

Plumber and Steamfitter from time to time has in its pages illustrated unique shop arrangements from which we hope all have benefitted, and during the coming year we hope to present numerous other illustrations of well-ordered shops and well-arranged displays of plumbing and heating goods.

Have you benefitted from the extension of waterworks and sewerage systems that has been made in your town this year ? You knew long before that such extensions were to be made, but did you let the people along the line of this work know that you were the one to consult on any plumbing or heating work ? Did the other fellow get in ahead of you because you did not say anything ?

When a customer has come to you to have an old copper-lined tub soldered up again, have you let him see the latest pattern of enameled iron tubs that need no solder, are handsomer, neater and more sanitary, or did you march right down and do that twenty-five cent job without saying a word ?

When a customer has come to you to have a new firepot put in his old hot-air furnace, have you suggested to him that a new furnace or a different system of heating—up-to-date and modern in every way—might be more advisable ?

Dozens of other means are at your command to extend your trade and influence and the more you take advantage of each and all the higher is bound to be the level of your trade.

PROVINCIAL AID IN TOWN DRAINAGE.

In a resolution approved by Oshawa Town Council, the Ontario Government is urged to assist the towns of the Province in instaling systems for the disposal of sewage. It is pointed out that the Provincial Treasury is being drawn upon for the purpose of aiding in the construction of county road systems, and the argument is advanced that the same source of supply should be open to urban communities desirous of putting in sewers.

The cases are hardly parallel, as is pointed out by The Toronto Star. A plant for the removal of sewage is mainly a local affair, and the cost will vary greatly in the case of different towns, owing to varying physical conditions. It would be difficult to fix a fair basis for the distribution of Provincial aid in carrying out such works, even if justification could be found for taxing the people of Muskoka for the removal of surplus water and dangerous filth from a town fronting on Lake Ontario out on Lake Erie. On the other hand, rural roads are not purely local, they are public highways; they form arteries through which commerce is carried to the towns, and, in these days of extensive auto traffic, they are used almost as much by people living in towns and cities as by the rural communities through which they pass. There is, therefore, some justification for the spending of money contributed by the Province generally on the up-keep of these highways.

One thing the Province might do, however, and it is something which has already been suggested in these columns; it might utilize the Department of Public Works and the Provincial Board of Health in preparing general plans for sewage disposal which could be utilized by any town desiring the same, the cost of construction to be borne by the town. While there are special difficulties to be overcome in special cases, there are some general principles that can be applied to all such undertakings, and the Provincial Government, with the aid of

its expert officials, can more easily and more cheaply work them out for all towns than each town can work them out for itself.

The need of a system of sewage disposal in all urban centers possessing a waterworks plant is imperative. The instalation of such is essential as a means of preventing the spread of diphtheria and typhoid, and while the Province could hardly be expected to assist in meeting the cost of building such systems, it might very well aid to the extent of supplying expert advice, which would be extremely valuable to the municipalities interested, and would involve practically no addition to the expense of Provincial administration.

PLUMBING INSPECTORS TO HOLD CONVENTION.

The third annual convention of the American Society of Plumbing and Sanitary Engineers which is to be held at Omaha on Feb. 8, 9 and 10, ought to be attended by a good delegation of Canadians, and money spent by any Canadian city in sending their plumbing inspector will be well repaid. Many civic delegations of aldermen are sent from which results amount to little more than a good time for the pleasure jaunters. But to send a technical man to a convention of technical men is to spend money with a certainty of getting results. Hamilton, Brantford, Kingston and other cities, where the inspection is done by city engineers, or men who have not had practical experience in the plumbing trade, ought to send the head of their engineering department or health board. Elsewhere in this issue ample reasons are given why the Society of Plumbing Inspectors should be supported, and the importance of plumbing inspection is urged by a Canadian writer.

The subjects suggested for discussion at the convention include: "House Sewers and Drains," "Soil and Vent Pipe Designs," "Traps and Trap Ventilation," "Defects of Plumbing Fixtures," "The Plumbing Inspector and Civil Service," "Dangers from Sewer Air," "Plumbing for Schools, Hospitals, Prisons, Asylums," etc. Delegates are asked to be prepared to discuss these subjects and to advise Secretary C. S. McCosker, Mobile, Alabama, if they have during the last year encountered in practice conditions or problems which can be used for lantern slide discussions?

Mutual advantage comes from an increasing and enthusiastic membership in the society from every part of America.

PLUMBING INSPECTOR CONDEMNS JOB.

One requisite of a successful plumbing inspector is firmness and an unwillingness to "hedge" once a wrong condition is discovered.

A. C. Shaver, plumbing inspector, Pasadena, Cal., has the quality for his job, as was well evidenced recently when he took a strong stand in opposition to a penurious board of education, by condemning the plumbing in several schools equipped with the latrine system of closets. He succeeded in having the old latrines removed and modern individual seat action closets and ventilated urinals installed. The plumbing inspector had to condemn the school buildings, however, before he gained his point.

A new toilet room, built away from the school building, had 19 closets and one urinal installed, at a cost of $1,600. The ground lines on this work were 4-inch, one accommodating ten closets and the other nine closets and a urinal. Each closet is taken off with a 4-inch combination Y and ⅛ bend, and ventilated from a 4x2 heel outlet bend. One 4-inch vent line is carried from each battery of closets to the highest point of the roof. The closet vents are 2-inch galvanized wrought iron, intersecting the main stack by means of inverted Y's and 45-degree fittings.

LIGHT MONOPOLY NO MORE.

Two hundred billion cubic feet of gas is annually manufactured and sold in the United States. To be exact, the figures are 196,259,542,200. The first statistics ever compiled to determine the immensity of the American gas industry were made public by A. Cressy Morrison, Chicago, manager of the appliance exposition of the National Commercial Gas Association, in an address to the Illuminating Engineers' Society.

Not considering the natural gas companies and the corporations with millions invested in the manufacture of gas appliances an inquiry directed from Chicago and continuing a month, revealed that $1,570,000,000 is invested in the gas industry. A total of 35,000,000 of the 80,000,000 people in the United States are served by the gas companies, which require 5,643,000 meters to measure their product. An average of 40,000 cubic feet is annually sold to each customer.

"There is no longer a monopoly in light," said Mr. Morrison to the 150 illumination experts of the society. "We are engaged in a great merchandizing business, regulated and controlled by a keen and healthy competition. Every source of light is an active competition of every other source.

"The illuminating engineer, member of a new-born profession, has come at the psychological moment. He is fostering the growing and already well-developed tendency of all municipal public service corporations to give the public a better understanding of the tremendous service which they render.

"Consider the business of lighting companies. The goods are sold at retail. They are delivered instantly. You turn the button. The goods are there. That marvel of electrical science, the telephone, is left far behind by the constant pressure from the gas main or the constant energy from the dynamo.

"Light has been made so easy for the public that it is treated almost as we treat water or air. We scarcely pay for water. We never pay for air. Convenience of modern life has, therefore, made the public feel that the manufacture of light comes under the form of dealing with nature rather than a manufacturing enterprise. In this lies much of the public feeling that the light bills are large.

"No competition in the world is giving the new and beautiful results to humanity which accrue through the efforts of the men who find their life work in studying the science of light. Man's greatest enemy has ever been darkness. The giving of light is a noble profession, and it is a profession which to-day is stimulating inventive genius throughout the world. It has been a long step from the storage of gas in dried bladders to the blazing gas-arc lamp of to-day.

"It is for the illuminating engineer to apply the various methods of illumination. It is for him to give to each eye the light it requires. It is for him to select for civilization the light values which its multifold forms demand, whether in the industries where color judgment is a necessity, in the operating room where the surgeon must discriminate between tissues, or for the street-farer who needs protection from the evils which darkness always fosters."

A Society Worthy of Support

Frank K. Chew, New York, Presents Some Strong Arguments Showing the Benefits of Having a Society for Plumbing Inspectors.

The wide acceptance as a fact that in a multitude of counsel there is wisdom justified the effort to establish the American Society of Inspectors of Plumbing and Sanitary Engineers that men engaged in any branch of sanitary work might meet and discuss its every detail, not only for mutual benefit but for the benefit of mankind. It is an honor for our president that he saw the need and had the courage to face all the difficulties encountered in establishing the society. It has already rendered excellent service in its chosen field and it remains for all who are engaged in that field to see that it is perpetuated and that its record is one of advancement and benefit wherever its energies are devoted and its influence reaches.

The history of all successful bodies organized for equally commendable purposes should be sufficient incentive for all men engaged in any branch of sanitary work to give this society the support of both their membership and the information gathered in their practice. They must follow the example of men in other societies and lay aside their prejudices, pet ideas, personal preferences and criticism and give encouragement to the society by taking part in its work and do their best to promote its objects. Its field is broad and without confining the things to be attained to those mentioned in the constitution and by-laws certainly two fields are suggested by its name in which good work is sure to benefit mankind.

Health Protective Education.

They suggest law and science. Taking them in this order there can be no doubt that associated effort can lend force to the educational work which should be taken up in every centre of population to show the people the advantage of health protective practice and through their representatives secure the enactment of laws and regulations to make the observance of these provisions mandatory under the surveillance of competent officials. There is no man who derives a livelihood from such an office but should feel that he owes to this society his allegiance. It is working for things that are to his positive interest. It needs the information he gathers in his every day experience through discussions at its meetings and reports on his practice and observations in his absence and in the preparation of papers on subjects of interest on which he is qualified and which will help to turn public sentiment toward health protective measures, help in providing proper regulations for plumbing work, help others in their official duties and provide in the society information that can be spread widely for public benefit.

The society is the proper repository for information which will serve to support those who are interested in the adherence to good practice well established who must lead a movement to have such changes made as are clearly shown necessary by opinions widely gathered yet arriving at the same conclusion. At times it seems the most natural attitude of the citizen to see only the difficulties that must be overcome rather than to discover how easily these difficulties can be removed by the expenditure of the same energy. The drafting of a state law for the regulation of plumbing or of a local ordinance for the same purpose to those who are not familiar with such work is a task of no mean proportions, but if the archives of our society contained copies of the laws of every state and copies of the plumbing regulations of the larger cities it would be possible for a committee composed of men qualified and most interested in these subjects to report on them and to point out where there has been an adherence to the beaten track rather than the intelligent diversion from it for the accomplishment of greater good to submit drafts of laws and regulations in advance of any now in force. Without such work is done the burden of advancement is likely to be thrown heavily upon some courageous individual who may lack the necessary endurance to persist to the end and he may feel disappointment that what he knows to be in every way commendable is not more freely accepted and that those who share his opinion do not throw the force of their influence to his support. This seems to show that the society provides ground upon which all who are interested in the legal phase of the society's work can meet, and if conscientious study is given to the work, orthodox laws can be made to protect the health and provide for the comfort of people in centres where now the work of the discouraged individual has failed to provide them with the benefits which others enjoy. The correspondence of our president and officials, though the society is yet in its infancy, will show that it already has been a great help to many who have sought assistance in the securing of plumbing regulations and that what the society has already accomplished makes it a welcome addition to the useful organizations already established and which have merited the confidence and support of mankind.

Many Questions Require Discussion.

Possibly if more detailed plans and suggestions were presented on the legal phase of the society's work the interest of plumbing inspectors would be more widely awakened, but there should be at least something implied in what has been presented which every sanitary official can apply to himself to bring home to him the desirability of contributing his little to the work upon which the society is engaged. A wider field of effort is found in the scientific phase of the society's work to which the sanitary engineer is devoted. Previous to the organization of our society sanitary engineers had no place of meeting which they could call essentially their own. The American Society of Civil Engineers had dealt with the larger problem of sewage disposal and water supply as an incident in the larger undertakings to which their energies are devoted. The American Public Health Association has similarly devoted much of the time at its meetings to the discussion of subjects on which prominent sanitary engineers have expressed their views so that the sanitary engineer has been giving of his best to the public. These sanitary engineers, however, are the men who should give encouragement to our body, which has already spread many useful papers before the public and already has its committee preparing to conduct tests to get authoritative information on the operation of sanitary equipment and has encouragement from government officials that as far as they have authority their co-operation will be given. There are points on which eminent sanitarians differ honestly and widely only because they have never had the opportunity of meeting and discussing the subject of difference where all information bearing upon it can be brought out so that ideas based on

wrong principles can be abandoned and a common effort made to secure general acceptance of a practice or a conclusion which is demonstrated in the light of full information to be correct.

Duty of Experienced Men.

There are engineers of long experience with a wealth of information who find that the demands upon their time leave little for the preparation of papers or for meeting their confreres or competitors for the discussion of points which in their mind have been settled. Yet these men owe it to their profession and to the public that the information which they have been able to collect in the service of their fellow men should be in some way recorded for the guidance of younger men. They also owe some of their busy time to the meeting with men who are engaged in the same line to explain by the presentation of facts discovered in actual practice why some of the conclusions which are leading some astray are not correct and should be abandoned. It is these men who owe even to our little society something from their lives, not for the benefit of the society alone but for the benefit of mankind. Every member of the society feels that it is worthy of support of every man in any way connected with the field of sanitary work. Familiarity with the commendable purposes for which it is organized will show that they can be attained more readily through the co-operation of both the officer of the law and the engineer or representative of science and to all a cordial invitation is extended to co-operate with it.

Importance of Plumbing Inspection

Thomas Watson, Sanitary Inspector, Fort William, Discusses a Subject of Interest to Hamilton, Brantford, Kingston, and Other Canadian Cities Where Plumbing Inspection Can be Improved Upon.

Perhaps no part of a sanitary inspector's duty is of more importance or value to the general health of a community than that of plumbing inspection. So much depends not only on the quality of the workmanship obtained, but also on the principles applied in construction.

Plumbing inspection, what is it, and what ought it to cover? Answers to these questions seem easy, and yet in actual performance are far from being carried out in general practice.

It seems a common-place statement to say that "plumbing" is the instaling into buildings of all that is necessary for the safe conveyance of water, gas and sewage, yet, how often do we find it a very source of danger to the health of the occupants? Inspection ought to cover the entire drainage and fixtures from its connection to the sewer to its vent outlet on roof. We are agreed then on questions and answers.

Do we agree as to who shall be inspectors? Health authorities have the duty and responsibility of safe-guarding the public health, and the care of many important details of house-construction is particularly imposed on them. The only officials they can employ are, either medical health officers and sanitary inspectors qualified in all the duties for which the offices call.

No objections can be advanced against a plumbing inspector pure and simple, where the volume of work warrants it, but such an officer must have a theoretical as well as practical knowledge of the science of sanitation and be subject to the supervision of the health authority.

That the plumbing of a building is an important part of it, is generally recognized, but it does not receive the attention, from a health point of view, which ought to be bestowed upon it. And why? Let authorities and their officials answer.

If officials do not advise and urge on their "boards" what is necessary to adopt in all branches of their work, are they fulfilling their duties as health officers? Or, if authorities fail to give consideration and respect to all matters of practcal sanitation brought to their notice, of what value will their servants become?

There seems small hope of ever attaining to uniformity in plumbing. As doctors differ so do sanitary engineers. But without presuming to state how a house ought to be drained, all will agree that can only be properly done, when the plumbing is such that it fulfils the object intended.

Differences in Climate.

The principles of sanitation are the same the world over, but the application of those principles differ in different climates. This may seem strange to many and yet is true. Students of sanitary science know that in order to attain the perfection mark in regard to house-drainage every means to avoid nuisance and the dangers arising therefrom must be employed. In one country all plumbing work and fixtures must be placed as far as possible from the living rooms, often in a wing separated by a ventilated corridor. In others the fixtures cannot be placed too conveniently, often invading the very bed chambers of the family. It is a recognized axiom that all drains, soil pipes and traps thereon be placed outside the house. Traps must impose a sufficient barrier against sewer gas and otherwise comply with conditions which will ensure perfect safety. All this can easily be adhered to in countries of moderate climates, but is difficult to obtain in our own land, for reasons well known to those whose duty is to instal and protect plumbing. This emphasizes the importance for inspection here, from the greater danger of foul air from drains and traps which must be protected.

The public have a right to protection, and any neglect of means to this end is just as criminal as neglecting to shield them from other sources of danger to health. On the other hand, owners of property, apart from motives of cost, must realize that regulations are made in the interest of the general weal.

Plumbing By-laws.

Then, as to by-laws regulating plumbing. They need only be simple, plain enactments stipulating what is actually necessary as to material, workmanship and the requirements of construction. Too often they are elaborate, confusedly detailed and unnecessarily stringent. Rules that provide a maximum of safety with a minimum of expense, labor and material properly applied, and which will stand inspection and test are sufficient.

Contractors could do much by subduing the competitive spirit, to uphold the efforts of sanitary officials to raise and hold the standard of good plumbing. The closer the affinity between them and inspectors the better the trade.

Inspectors must take the by-laws as their guide, and depart not from the letter of the law. They must exercise tact and judgment, be systematic, courteous and firm, with integrity above reproach.

To Verdun town belongs the distinction of having the first municipal water filter plant on the Island of Montreal, and in a few weeks the new town will be supplied with filtered water for all purposes. Water is taken at a distance of 1,000 feet from the shore, in the main current, and runs by gravitation into a large steel well, from which it is pumped and filtered.

Troubles With Heating Apparatus

Some of the Complaints Met With and How to Overcome Them—Continued From Last Issue of Plumber and Steamfitter —By C. E. Oldacre.

Quite often along comes the complaint from users of hot air heaters, particularly of an over-abundance of heat in the early fall months when the fires are just started. These complaints come just as often when the whole plant has been carefully laid out and erected as from the other kind. They are most likely to come when the apparatus is of ample size for the work at any and all seasons of the year. But such complaints are, of course, easily traced to the management of the fires.

Frequently the grates are agitated too much or the drafts are left on for too great a length of time.

Where the operation of the heater is left to some servant who has plenty of other duties or to an outside furnace caretaker, the drafts are frequently neglected. Or, perhaps, without any forethought concerning the matter, the heating apparatus is operated just the same as it would be necessary in midwinter.

Don't shake the grates any more than necessary—don't let the fire run up too thoroughly, and if you want to get full value for the coal burned don't try to check the fire by leaving the feeder door wide open. Of course, these remarks applies to mild weather needs.

Value of Pure Air.

Using outside air through a fresh air duct with a warm air heating system may not be the most economical from the point of coal consumption, but from a sanitary standpoint, there can be nothing so good. The greater the amount of fresh air introduced the purer the air of the room or rooms is necessary.

Pure air is one of the greatest enemies of all diseases. The great ease with which large volumes of pure warmed air can be brought into the various rooms of a moderate sized dwelling is one of the prime merits of the warm air method of house heating. Any arrangement that reduces this advantage detracts just so much from its value as a heating system. Where inside air is used only—that is the air is returned through one or more return air ducts to the heater, then the same air is breathed over and over to the detriment of all our home dwellers.

No means of satisfactorily taking the air from both the outside and inside at the same time under all conditions without causing an over amount of attention has been devised and from a sanitary viewpoint can never be considered as desirable.

Objection to Warm Air Ducts.

Another great objection to the means of circulating the inside air is that a great deal of dust, carpet sweepings and dirt is continually carried into the return air ducts. Here this dirt may lodge and is gradually carried back into the rooms in greater or lesser quantities to be breathed by every occupant. No one can possibly say such a method can ever be considered a sanitary method of heating—it may be economical from the point of coal consumption, but nothing more.

To give good results a fresh air duct taken from the outside should be three-fourth (¾ths) the area of the combined heat pipes taken from the furnace, and if rotated air is used (inside air) then the duct or ducts leading to the base of the furnace should be of the same area as the combined air of all the heat pipes.

Too often air ducts of much smaller sizes will be found. Where such is the case the heating is quite likely to be uneven, fluctuating and generally unsatisfactory.

Air that is not admitted to the base of the heater and heated in passing over the warmer surfaces of the heater can not be expected to be delivered into the various rooms through the various heat outlets or registers.

Air expands one four hundred and ninetieth, or, roughly speaking, only one five hundredth for each degree it is raised above freezing (32 degrees Fahr.) so that air that is heated from 32 degrees Fahrenheit to 142 degrees—a very reasonable temperature for the air delivered from a heat outlet or register under the coldest average winter condition—has been increased in bulk, but 22 per cent. and the increase in bulk would be only slightly greater if the air was taken into the air duct at zero.

Hence it is easy to see why we need outside air ducts which are at least equal in size to three-fourths the combined area of all the heat pipes that lead to the various rooms, and where the air is used from the inside and not raised in temperature to the same extent need be still larger.

Control Fresh Air Supply.

One great fault found with ducts leading from the outside and which are of the required area is that under certain conditions—particularly when the wind may be blowing strongly from the side on which the opening into the air duct is located—that more air is passing through the duct than can be reasonably heated. This causes the temperature of the air delivered through the heat registers to be too low.

This can easily be remedied by putting a controlling damper in the fresh air duct at some convenient point between the outside inlet and the base of the heater. This controlling damper should not be a slide damper that can shut off the entire air supply, but should be a swing damper so arranged that, as the air is closed off the outside, an inlet leading from the basement or cellar is opened an equal amount. Such an arrangement affords a liberal supply of air at all times, and the air supply from being carelessly closed off at any time.

Where inlet registers for inside air circulation are placed in the floor, which is generally considered the easiest (if not convenient) location for such registers, they are liable to become covered with rugs, carpet or some piece of furniture so that there is no chance for the air to get back to the base of the heater. The result in such cases is that heat may be found coming out of some registers and the air will be found to be going into others—this phenomena not always remaining constant with any particular register, but may be fluctuating. Closing of the air inlets will also ensure burnt out fire pots in a very comparatively short length of time.

An outside air duct should be connected with the heater casing directly at the back and spread out to the full width of the casing, if possible, or should be connected through an underground duct admitting the air underneath the heater.

Overhead ducts are to be preferred for various reasons and are best made of galvanized sheet iron.

Poorly Installed Furnace.

A job of warm-air heating where inside air was used that did not give reasonable results, was once called to the writer's notice. In the work most every one of the most common rules for warm-air heating was violated. The work in its execution as a piece of metal work was a most pleasing looking piece of work, except for the results to be had in its operation.

The house was a well constructed one about 25 x 36 feet, two storeys and a half, solid brick construction. The heater was one having about a 26-inch or 27-inch grate, and a 52-inch to 54-inch casing.

There were four rooms and a hall on the ground floor, four bed rooms and a bath on the first floor, and two attic rooms to be heated. The registers were most of the base-board pattern, having extended fronts. There were five pipes leading from the heater and these pipes were 12 inches in diameter. A 12-inch pipe has an area of 113 square inches so that the combined area was 565 square inches. These five pipes were so connected to the stack pipes or heat flues that in all cases rooms on two or more floors were heated from the same cellar pipe.

The return air duct was taken from the hall and the inlet had a register fan about 15 inches by 24 inches, or a net area of about 270 square inches. The duct was carried over from the register to a point near the heater by inclosing the space between three joists with sheet tin. The joists were placed at 13-inch centres and were 2 x 10 joists, so that the net area of the duct was only about 220 square inches.

With a good bright fire in the heater that is clean down to the grate the best that could be done satisfactorily was to heat up the smoke pipe and get the heater casing at normally hot.

Air Reversed in Pipes.

When the registers were so set that the heated air was directed entirely to the lower floor a pretty good volume of warm air could be noticed coming from the ground floor registers, but if the upper registers were open and the registers on the ground floor were set so as to allow a part of the air to go to either floor then at the ground floor register it was instantly noticed that there was a reversal of the air currents. This could be easily noticed by holding a lighted match or taper at the register on the ground floor.

On examination it was found that though the registers provided for good size wall stacks for the ground floor that the framing of the building and the setting of the studding did not permit of them, or that no precaution was exercised to see that the necessary joists were properly trimmed to permit of the placing of the proper sized heat flues in the partitions.

In one case the bare floor boards were run into and cut off the area of the flue so that the area of the flue was not over 48 square inches, yet the pipe that led to the flue was 12 inches, giving an area of 113 square inches.

Insufficient Air Supply.

On the first floor was one room used as a sitting-room. This room was the northwest corner room, and was about 12 by 15 feet, with a 9-foot ceiling or a room of about 1,600 cubic feet contents. The flue that led to this room was only 2¾ inches by 8 inches, and the register was 6 inches x 8 inches. Both of these are entirely too small, especially as there was another outlet on this flue on the floor below. Yet this flue failed to do its work, mostly because there was no chance for the air to travel through the furnace. Think of a furnace with a 26 or 27-inch grate and only having an inside air duct with but about 200 square inches of area.

About two and a half times this area in the return duct together with more liberal sized wall stocks could have accomplished a great deal better results. The air duct is the breathing pipe of a warm air heating system and the more it is restricted the poorer are bound to be the results, providing due consideration has been given to the arrangement of all other details.

Poor School House Job.

The writer had the opportunity some years since of examining a heating plant in a school house that was not giving good results. The building was a four-room school, having the usual hallways, cloak rooms and principal's office.

In the basement were two heaters having 24-inch grates. The two heaters were enclosed in one common heating chamber and al the heat flues were taken from this chamber of course.

Arrangements had been made for taking the air either the outside or the inside. From each of the school rooms a return duct equal in size to the heat flue leading to the room was taken back to the base of the heater. All of these return ducts, however, lead to the heating chamber through a common mixing room.

None of the rooms could be satisfactorily heated.

It was found on examination that the fresh air duct from the outside was taken from the east side of the building and that it had to be closed so that the entire air for the heating (and ventilation?) of the building was to be had only through the return ducts. The return ducts from the upper floors could hardly be expected to work under such conditions.

Most peculiarly of all, however, it was found the register faces for the return ducts from the upper floor were located in the floor of the school room, where all the school children could pass over them, scraping and shuffling their shoes over them and that the faces were loose.

The faces being loose were lifted and it was at once seen that the return ducts were dumping shafts or chutes for the easy disposal of sweepings, waste paper, pencil cuttings, etc. Over these, and through these the air for the heating of these school rooms was expected to pass. Yet we read much in the papers these days about tuburculosis and its prevention.

Both Inside and Outside Supply.

This building might easily have been heated by two separate warm-air heaters provided with outside air ducts for service during school hours, and if thought desirable there might have been inside ducts for the circulation of the air during hours when school was not in session. During such times, which might be from 15 to 17 hours, the air from the outside might have been closed off entirely. Ventilating flues running up along side of the chimneys could have been taken from each school room, ensuring better ventilation and certain results in so far as the heating was concerned.

When speaking of the use of inside air for the air supply to warm air furnaces, the writer can not help recall the first case of such work he ever came in contact with.

It was a cold day, as early in the morning the thermometer had dropped to more than 30 degrees below zero.

On arriving at the house in question it was explained to the owner that it was desired to look over the heating apparatus which had been installed a year before and explain its construction to the writer.

As intimated, it was in order to explain the workings of a warm-air heating apparatus operating entirely with inside air, and when this part of the subject was gone over the owner at once had to explain that it had been found necessary to have such arrangements discontinued and that they had had all the return air ducts disconnected and were then using only outside air, and had found such an arrangement much more satisfactory. There were four rooms and a hall from which the air had been taken through registers measuring over all not less than 14 x 18 inches. These had all been disconnected—though they still remained in the floor of the lower floor rooms, and one duct was taken from the outside for the necessary air supply. The owner explained that the amount of coal consumed for a season did not seem to be increased and that the results were vastly better.

A new company has been formed in Amherst, N.S., which has bought the patent rights of Joseph Heaton, late of Hampton, N.B. The company purpose manufacturing acetylene generators and other articles in connection with heating. E. A. Chaters, of Sussex, and A. N. Charters, of Moncton, are on the directorate.

One Pipe System Hot Water Heating

E. Fredericks Urges the Advantages of This System in Residence Heating — Description of a System Prepared Specially for The Plumber and Steamfitter.

The accompanying sketches show a two-storey brick veneer house, built in an extremely exposed position with a front exposure north, and no buildings or protection from winds with exception of some garden shrubs within quite a distance. The radiation herein given and the piping system is in actual use and is in every way satisfactory as a heating plant.

Some exception has been taken to this form of piping and I believe justly, in most cases of large jobs, but for the square plan of a private house. I have personally tested a number of systems and found them in every way satisfactory, and as economical on the fuel bill as the usual two-pipe system.

Radiation Required.

Figuring the radiation on parlor, in which there is a four wide 26½ inch high radiator containing 96 square feet, opposite end connection by the rule of dividing glass by 2, exposed wall by 20 and cubic contents by 200, we would arrive at 60 square feet glass÷2=30; 240 square feet exposed wall÷20=12; 2,240 cubic contents ÷200=11 1-5, making a total of 53 1-5 square feet.

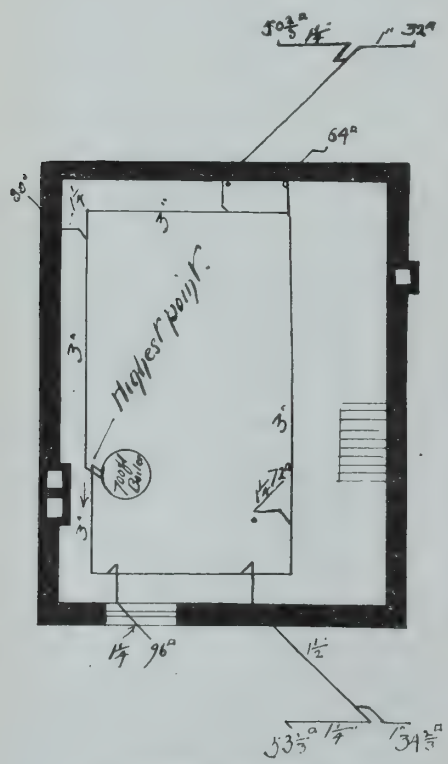


Fig. 1—Basement.

Add to this amount 20 per cent. for north end east exposure would make it practically 65 square feet. This is for steam, and add 60 per cent. for hot water makes abount 104 square feet. It will be seen here that according to this rule 16 square feet more should have been added to what was installed.

Carpenter's rule, given in his work on hot water heating, gives the same results in this room as was used, namely, 96 square feet. 240 square feet of exposed wall÷4=60; 2,240 cubic contents (allowing for two changes of air per hour)÷27=83; plus total amount glass, 60, totaling 203. Add 20 per cent. for

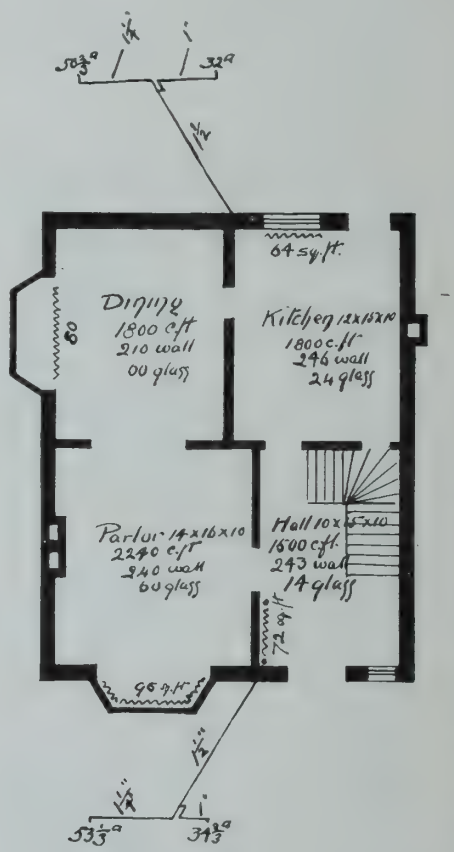


Fig. 2.—Ground Floor.

north and east exposure, 40, making 243. Then divide the product by four (61) and add 60 per cent. to this for hot water, and the result is 97 square feet.

Now again using a rule that is good, from the fact that it permits of gauging a larger range of temperature, we get: 240 square feet of exposed wall÷4=60; 2,240 cubic contents (two changes)÷27 =83; plus total amount glass, 60, totalling 203, add 20 per cent. for exposure north and east, making 243. The product is then multiplied by the difference in required air inside and the outside temperature. In this case, room 70 per cent.; outside, zero, making 243×70=17010. Using the authority that one square foot of hot water radiation gives off 155 heat units per hour in a room at 70 degrees temperature, we divide the 17010÷155, and find room requires as per this rule—practically 110 square feet.

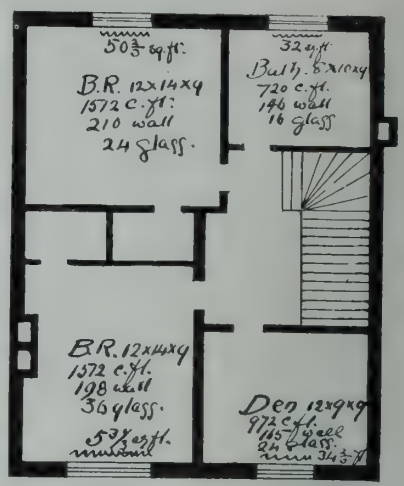


Fig. 3—Upstairs Layout.

The Various Rooms.

The dining room has an 80-foot radiator 32½ in. high, oposite end connection. Using the foregoing rules to figure required radiation, the amount seems more than necessary, but it is good practice to give a dining room a good portion as this room is used in the early morning when the average householder has not the boiler very well fired. In this case the householder made special mention of the comfort of the room in the mornings.

The hall with 1,500 cubic contents has a 38 in. radiator containing 72 square feet. This would look to be out of proportion for the contents, but no heat was placed in the upper hall, the stair-well being open. The steamfitter's judgment in a case like this must be exercised as a given rule would hardly apply.

The radiator in the kitchen was assisted by the gas range and a 30-gallon domestic boiler connected by a coil to the furnace. Cubic contents were 1,800 and the amount given 64 square feet. This was ample to heat to 65 degrees under the existing circumstances, and on account of gas being used for cooking was found to be right.

Bed room No. 1 was to have 65 degrees of heat, and faces north with an east exposure. Allowance being made for the lesser temperature required, give 55 feet, the nearest radiator 26½ high containing 53 1-3 square feet, the amount used. Bed room No. 2, with a south and east exposure, the same size as No. 1, has 50 2-3 square feet.

The den needs to be well heated and this one with 34 2-3 square feet of 26½-inch. radiation, heated up to 70 degrees, when the outside temperature was around 10 degrees above zero. With the

front facing north and the side west, this does not seem to be any too much, but a den is generally well filled, so cuts down the cubical contents.

The bath room was to have 72 degrees at zero, and as per the rules here given, would require the amount that was used —32 square feet of 26½ in. high. A fair size local vent was connected to the flue provided for the kitchen range, thereby making a greater change of air and heat loss.

Ordinary wood wheel air vents were placed on each radiator and quick opening radiator valves.

Arrangement of Piping.

A hot water boiler of 700 square feet gross heating capacity was used, and a 3-inch main, as shown in sketch No. 3, was used in the cellar work. There was 80 feet of 3-inch pipe. Six Eureka fittings in the form of double tee with partition sending return flow to the bottom of pipe provided for the branches. In some instances this connection is made with two ordinary tees, the flow off the top of main and the return on the side.

The feed and return were run exactly as in the regular two-pipe work, and the cellar pipes were covered with asbestos sectional covering, making a very neat job, with the boiler also covered with asbestos wired in.

The expansion tank was placed on the bath room and connected to boiler return in basement. From the highest point of main a vent pipe was run to a tee placed in vent to roof, just above the overflow. See sketch No. 4.

When the test was made a fairly strong breeze was blowing from the east and temperature was around 10 degrees above zero. The water at the boiler showed 162 degrees and parlor radiator 156 degrees, and the variance in the different radiators was no more than a few points. No test was made of return, but dining room radiator showed 152 degrees, and was the last one off the main. A good chimney 8x8 inches was used, running clear of the roof, and the rate of combustion was such as to get the best results from the coal. On this day, which was, of course, not so cold as provided for, an even temperature of 73 degrees in parlor and dining room was shown, and 70 degrees in kitchen and 72 degrees in hall. The bath room was 74 degrees the front bed room 68 degrees, and the den 70 degrees. We were unable to test the other bed room. All doors were closed leading from one room to another except the dining and parlor between which there hung only a curtain. There would be probably 200 days of firing.

Some authorities approximate the consumption of fuel in boiler of medium size at 40 pounds of hard coal to one foot of radiation. In this case 482 2-3 square feet would mean eight and a half tons. This applies very well to this instance, as the amount of coal burned was harly eight tons, but it is hardly probable that the full 200 days of service was required.

Heat Losses.

It is interesting to compute the amount of radiation required for the parlor by the heat losses through walls and windows and ventilation.

Glass, 60 square feet, losing 1.09 b.t.u. per square feet per hour per degree of difference gives us 60×1.09×difference in outside and desired inside air, namely, 70 degrees equals 4578 b.t.u. per hour.

Exposed wall 240 square feet losing .30 bt.u. as above, gives us 30×240×70 =5040 b.t.u. per hour.

The cellar having no heat but the boiler and mains and these asbestos-covered, the floor is computed to loose

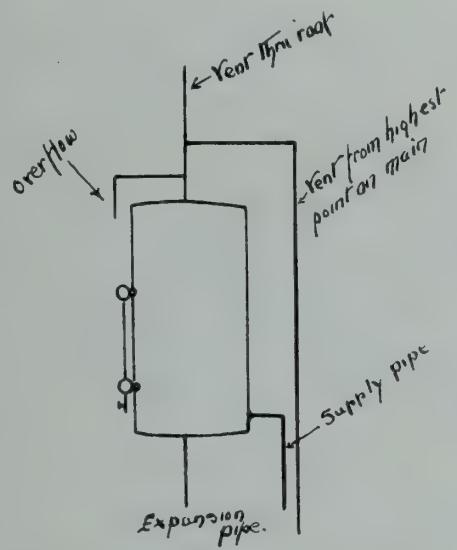


Fig. 4—Expansion Tank Connection.

.10 b.t.u., giving us 224×10×70=1568 b.t.u.

The loss through ventilation or change of air is taken care of by multiplying the cubical contents by .02 and is 2240× .02×70=3136 b.t.u.

The total heat loss per hour is therefore 14322 b.t.u. Granting that one square foot of radiation will give off 155 heat units, with room at 70 degrees, the required radiation would be 14322÷ 155=92 62-155, say 93. Increasing this 10 per cent. for exposure makes amount 102 square feet, as against 96 square feet installed.

A new gasfitting concern has just been started in Chatham under the firm name of Arntfield & Jones. R. H. Jones was formerly employed with the Chatham Gas Co.

DESIGNING SEPTIC SEWAGE SYSTEMS.

The invitation presented in the last issue for sanitary engineers to give something for guidance in the design of systems for the septic treatment of house sewage has been accepted by Burton J. Ashley, Chicago, in The Metal Worker, who presents the following list of important matters for consideration. As such systems are more widely used and the necessary information for tabulation is acquired, simplification will develop and enable the intelligent plumber to design and instal systems that will be safe and satisfactory. Mr. Ashley's points are:

Apparently similar cases are sometimes so dissimilar; in fact, conditions are so constantly at variance with each other that a hard and fast rule for gauging capacities of biological plants is entirely out of the question. The following are items which control the gauging of plants:

1. Occupancy — Residence, summer home, boarding house, rooming house, hotel, or what?
2. Time in use—All the year, summer only, how many months?
3. Number of persons—Average number of persons living in house all told; maximum; minimum.
4. Low, medium or high class use, as for instance: How many of the above number are servants?
5. Number and kind of fixtures — Bathtubs, water closets, kitchen or other sinks, stationary laundry tubs, lavatories, washbowls and pitchers.
6. Available area for disposal.
7. Is ground sloping or level?
8. What is the percentage of slope?
9. Other disposal than absorption—Is there a sewer, farm drain, brook, stream, slough or lake available for drainage purposes? How far? Feet?
10. Kind of soil at first foot depth? At second foot depth? At third foot depth? At fourth foot depth? At fifth foot depth?
11. Is last 3 ft. porous, medium porous or impervious?
12. Water supply—Well, cistern, city water main, compression tank, elevated tank, gravity reservoir or what?
13. If pumped, will you use a power or hand pump?
14. Do you wish to maintain an outdoor privy?

By permuting these numbers it will be seen just how many different cases it is possible that an engineer is obliged to consider in his daily routine of work. This is unquestionably the reason he feels why engineers, both in justice to themselves and to the public, refuse to become authority on definite instructions for building these biological plants, knowing full well the disaster that would follow such a statement.

Water Hammer in Steam Pipes

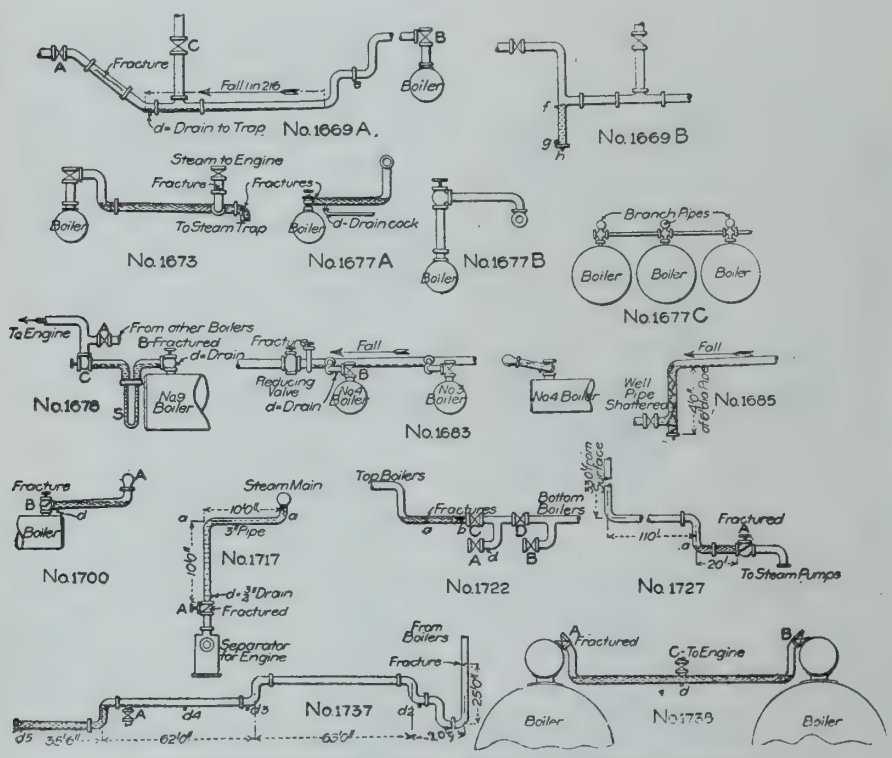
An Outline of the Causes of Fractures in Piping and Fixtures—By Michael Longridge, Chief Engineer of the British Engine, Boiler & Electrical Insurance Company.

The following summary taken from the report of an address by Mr. Longridge, that in most cases the opening of the wrong valve resulted in setting up the destructive movement of the water, and that the accidents would have been avoided if the operators understood the conditions:

No. 1669.—Initial conditions: Pipes 250 ft. long, newly erected and uncovered. Drain d blocked by cement jointing material and rust. Stop valve A (see Fig. 1669A) to other boiler and boiler junction valve B shut down to re-make joint at e, valve C left open. Water accumulated in pipe before stoppage, and cooled during stoppage.

Act which caused fracture, opening valve to engine. Here again the fault was trusting that the steam trap had kept the steam range clear, and opening the valve B. The mistake here was in relying on a steam trap for draining a new pipe. A large drain cock, without a waste pipe, should have been fitted close to the pipe. The arrangement of the pipe was bad; it should have been made as shown in Fig. 1669B, with a well pipe provided with a small try cock, or some kind of float telltale, and a large drain cock, to be subsequently connected to a steam trap. The try cocks or float would have enabled the engineer to ascertain if the water were below the horizontal length of pipe before he opened the drain cock or the junction valve B. Try cocks, if used, must be very small, and opened for a very short time, otherwise the discharge from them may be sufficient to disturb the surface of the water in the horizontal length of pipe, and thus start the water hammer they are intended to prevent. Floats will be referred to later.

No. 1673.—Initial conditions: Steam kept up on Saturday and Sunday, and boiler junction valves left open. Steam trap blocked. Horizontal length of pipe filled with condensed steam.



Diagrams of Steam Piping Broken by Water Hammer.

Act which caused water hammer, opening stop valve A to give steam to engine. The fault was in opening the valve A before closing the valve C. The man ought to have known that unless the valves B and C were absolutely tight there would probably be water in the super-heater. He ought, therefore, to have shut the valve C before opening A, and left it closed with the water in the superheater till the fire was lighted in No. 9 boiler to boil it off. The drain d should, of course, have been fixed at the lowest possible point of the pipe.

No. 1678.—Initial conditions. No. 9 boiler off for three weeks, junction valve B closed, stop valve C very leaky, open at time of explosion (see Fig. 1678). Drain d open, stop valve A, leading to other boilers, shut 15 hr. before explosion. Superheater S contained water, and possibly also the 7-inch pipe up to level of drain d.

Act which caused water hammer, opening valve B. The mistake here was in relying on a steam trap for draining a new pipe. A large drain cock, without a waste pipe, should have been fitted close to the pipe. The arrangement of the pipe was bad; it should have been made as shown in Fig. 1669B, with a well pipe provided with a small try cock, or some kind of float telltale, and a large drain cock, to be subsequently connected to a steam trap. The try cocks or float would have enabled the engineer to ascertain if the water were below the horizontal length of pipe before he opened the drain cock or the junction valve B. Try cocks, if used, must be very small, and opened for a very short time, otherwise the discharge from them may be sufficient to disturb the surface of the water in the horizontal length of pipe, and thus start the water hammer they are intended to prevent. Floats will be referred to later.

No. 1677.—Initial conditions. Boiler off for cleaning, junction valve shut. Drain cock d (Fig. 1677A) left slightly open and got blocked. Water accumulated in horizontal branch.

Act which caused the water hammer, man opened drain cock d full to blow out obstruction. The fault was in opening the cock without first shutting the junction valves of all the boilers. Where there is more than one boiler the branch pipes should be fixed as in Fig. 1677B, or if this be impossible for want of head room, all the branches should be drained by large pipes without cocks or valves, leading into a main pipe across the range of boilers, with a connection controlled by a cock to each boiler, as indicated by Fig. 1677C, so that when any boiler is stopped its branch pipe will drain into the other boilers.

No. 1678.—Initial conditions. No. 9 boiler off for three weeks, junction valve B closed, stop valve C very leaky, open at time of explosion (see Fig. 1678). Drain d open, stop valve A, leading to other boilers, shut 15 hr. before explosion. Superheater S contained water, and possibly also the 7-inch pipe up to level of drain d.

Act which caused water hammer, opening stop valve A to give steam to engine. The fault was in opening the valve A before closing the valve C. The man ought to have known that unless the valves B and C were absolutely tight there would probably be water in the super-heater. He ought, therefore, to have shut the valve C before opening A, and left it closed with the water in the superheater till the fire was lighted in No. 9 boiler to boil it off. The drain d should, of course, have been fixed at the lowest possible point of the pipe.

No. 1683.—Initial conditions: Nos. 1, 2, 3 boilers working, No. 4 boiler empty for 31 hr.; drain d (Fig. 1683) slightly open, sluice valve shut. Water accumulated in lower end of steam main and branch to No. 4 boiler, either through slightly opened drain cock getting blocked or through condensation in the pipe exceeding discharge.

Act which caused water hammer, opening sluice valve without shutting the stop valves in the other boilers. If the drain d had been cross connected to the other boilers, as shown on the third sketch belonging to No. 1677, the steam main might have been kept free from water.

No. 1685.—Initial conditions: Steam left to condense in 90 ft. of new uncovered pipe varying from 9 in. to 6 in. diameter during dinner hour; engine stop valve A shut, drain d shut (Fig. 1685).

Act which caused water hammer, opening the engine stop valve A. The fault was in opening the engine stop valve before closing the boiler junction valve and opening the drain d. With the well pipe overflowing into the steam main, it would have been dangerous to open the drain d without first shutting the boiler junction valves. A try cock or a float telltale would have shown whether the well pipe was full.

No. 1700.—Initial conditions: Boiler empty, junction valve B shut, drain d shut. Other boilers in connection with steam main A working. Condensed

steam accumulated in branch pipe, and got cool.

Act which produced water hammer, opening drain d. The fault was in opening the drain without shutting off steam from the main A. The drain d should have been cross connected to other boilers, or at least to one of them, as shown in the third sketch belonging to No. 1677.

No. 1717.—Initial conditions: Stop valve A shut, draw d shut, 3-in. pipe full of condensed steam at low temperature

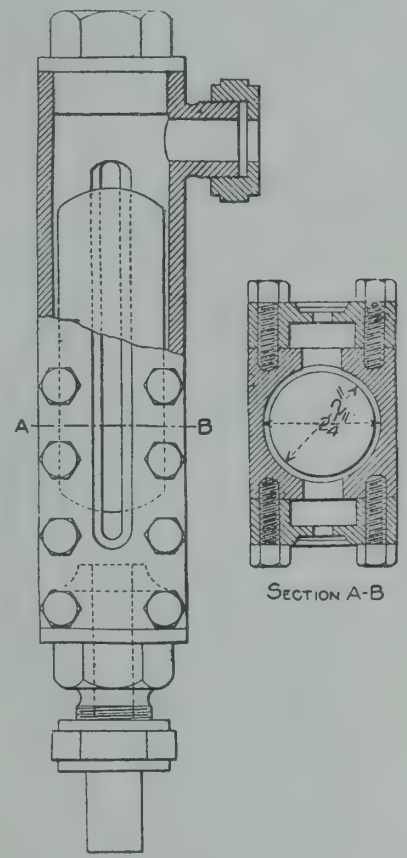
Act which caused water hammer, opening drain d two turns, giving an opening of 0.137 sq. in. for 2 min. (?), or, if this did not lower the water level in the 3-in. pipe to a a, opening the stop valve A after the drain had been open 2 min. (?). Whichever of these acts lowered the water level in the 3-in. pipe to a a caused the water hammer. The fault was in opening the drain or the valve without shutting the steam off the steam main. The drain should have been trapped and left open, but the better plan would have been to have placed the stop valve A close under the steam main.

No. 1722.—Initial conditions: Stop valve C shut, D open. Engine stop valve A open, drain d shut. Condensed steam had accumulated and cooled in pipe a b.

Act which caused water hammer, closing valve D opening drain d and valve C. The fault was in opening C before closing the junction valves on the top boilers. To avoid the necessity of having to close these valves before opening the valve C, the pipe a b should have been fitted with a large drain leading to a steam trap, which would have kept the pipe clear so long as the trap acted. But the better plan would have been to have had a well pipe close to C, drained by a trap, and fitted with a float telltale or small test cock or both, as above described, to enable the man in charge to ascertain whether the pipe were free from water before opening the valve C, and to warn him to shut the junction valve on the top boilers if it were not.

No. 1727.—Initial conditions: Valve A shut, lower part of pipe filled with water, the result of half an hour's condensation in steam pipe from surface to bottom of pit.

Act which caused water hammer, opening valve A to pumps. The fault was in opening A before closing the boiler junction valve. A water hammer was almost unavoidable in this case, because it was impossible to empty the pipe a b owing to the seat of the valve A being level with the centre of the pipe. The only chance would be to shut the boiler junction valve, then open A, then open the junction valve a very small fraction of a turn to prevent a vacuum in the pipe and allow the water to run out through the drain cocks on the pump cylinders down to the level of the seating of the valve A, and then to open the junction valve a little wider, just sufficiently to cause agitation without violent motion of the water remaining in the pipe, in order to heat this water. With great care it might be possible to heat the water sufficiently to prevent water hammer, but considering the great length of steam pipe this is very doubtful. Had the valve A been a sluice valve, all the water might with care have been got rid of through the drains of the pump cylinders without accident. There should, of course, have been at least a drain at the lowest point of the pipe, which should have been open whenever A was shut, but the proper thing in such a case is a well pipe with try cocks or a float telltale.



Telltale Float for Water Pocket or Well.

No. 1737.—Initial conditions: Small valve A shut, drains d5 d4 shut, drain d3 d2 open, boiler junction valve open. Condensed steam accumulated and cooled in end of pipe.

Act which caused water hammer, partly opening small valve A and drain d5. The water hammer was not hard enough to knock off the end of the pipe, but it shook the range sufficiently to break it about 200 ft. back. Again the fault was in attempting to drain off the water without shutting the boiler stop valve. The drain d5 should have been trapped, or, better still, there should have been a well pipe with telltale at the low end of the range.

No. 1738.—Initial conditions: Engine standing for some hours, valves A, B, C shut, drain d shut. Condensing steam leaking past A and B accumulated and cooled in pipe.

Act which caused water hammer, opening drain d and easing junction valve B. The first fault was in keeping d shut with leaky stop valves; the second, in opening B before all the water had escaped from the pipe.

Commenting on the report the Metal Worker says that in all these cases the water hammer was caused by the disturbance of a comparatively large water surface in a horizontal or inclined pipe, in which the water was capable of moving; and wherever there is such a water surface water hammer will almost certainly be produced if that surface be disturbed by the opening of a valve or a drain. Therefore, whenever there is any doubt about the presence of water in such a pipe it is dangerous to attempt to drain the water away without first shutting steam off the pipe. From a vertical pipe water can be drained with little risk, because the water resting on the bottom end of the pipe cannot be set in motion.

Mention has been made of a float telltale for indicating the level of the water surface in a well pipe. Mr. Longridge does not know that there are any on the market, but he is sure that if there were a demand, as there ought to be, something simple and reliable would soon be invented and manufactured. The essential conditions of success are that there must be no joint, no hinge and no gland, that the thing must be cheap and easily applied.

He makes a suggestion which is shown in one of the illustrations. It consists of a brass box containing a brass or copper cylindrical float, capable of withstanding an external pressure of 250 pounds per square inch, which rests upon the bottom when the box is full of steam, and rises to the top when floated by water. Two windows, like those of a Klinger water guage, diametrically opposite to each other, enable a man holding a light behind the gauge to see whether the float is at the top or bottom of the box, even if the glass windows carry a fair amount of dirt, and warn him, if he sees the float at the top or if he cannot see it at all for dirt to shut the boiler junction valves before attempting to drain the pipe. The float is shown 2 in. diameter and 6 in. long. Probably a smaller float can be made to withstand the pressure, but weighs less than the water it displaces. The smallest practicable size, however, can only be ascertained by experiment. The gauge is shown without cocks, because cocks would enable a man to render it inoperative, and it is desirable that any apparatus of this kind should

be as far as possible foolproof. A more convenient arrangement would be to use the float to short-circuit two insulated plugs screwed into the upper part of the box to ring an electric bell, but it has the disadvantage of becoming inoperative if the battery should be allowed to run down.

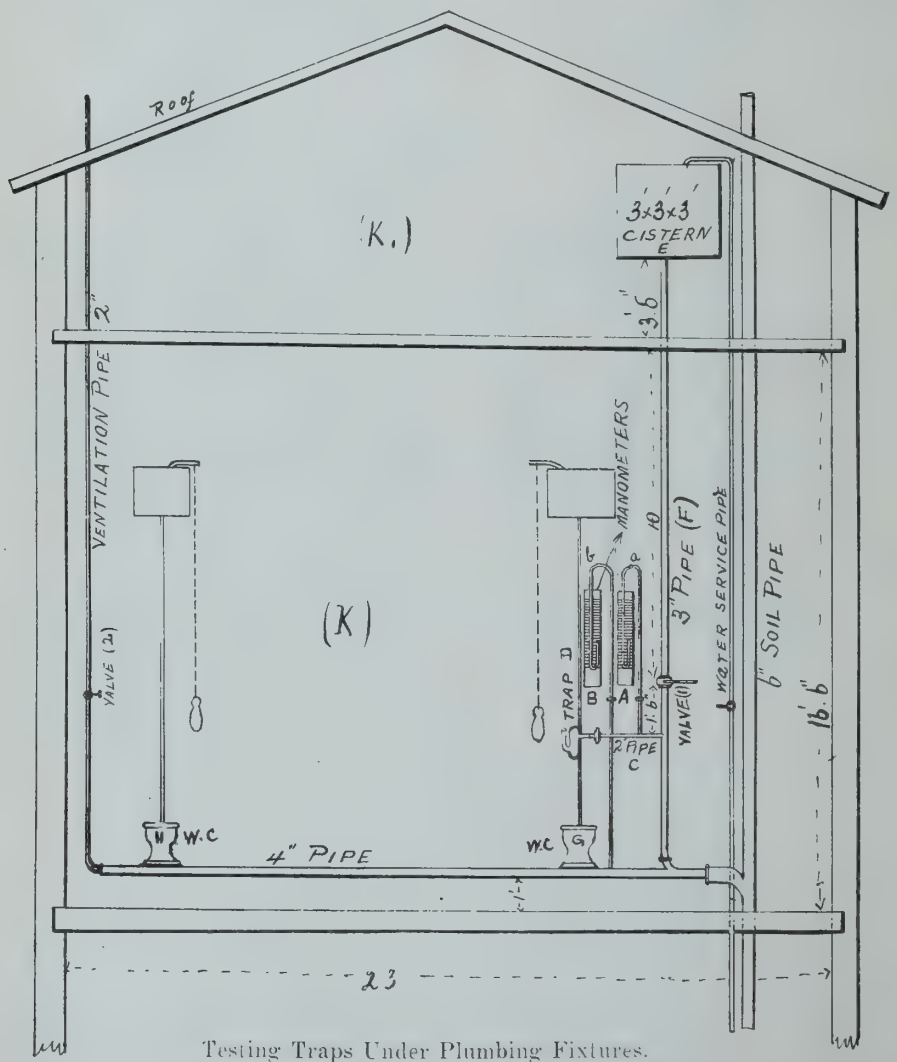
Testing Traps Used Under Plumbing Fixtures

Description of a Device Recently Invented by J. E. Dore, City Sanitary Engineer, Montreal.

The room occupied by the board of examiners for plumbers, located in the tower of the north corner of the City Hall, Montreal, has been fitted up with a plant for testing traps used under plumbing fixtures.

The plan and description of this device are as follows: On a 6-inch soil pipe going through the roof is branched a 4-inch pipe that stretches across the room K. Connected on the end of this 4-inch pipe is a 2-inch ventilation pipe prolonged above the roof. On this 2-inch pipe is fitted a valve. (2)

The horizontal 4-inch pipe has four w.c. connections. On the 4-inch pipe near the 6-inch soil pipe is branched a 3-inch pipe F, that goes up to the garret K, and is connected to a 250 gallon cistern. On this 3-inch pipe F at a distance of 13 feet 6 inches from the cistern, is fitted a 3-inch quick opening valve (1). A foot and a half below the valve (1) is branched a 2-inch pipe (C) fitted at its free end with screwed fittings to permit the adjustment of traps to be tested on it. On the 2-inch branch (C) and the 4-inch pipe are connected two small pipes (A) and (B) that are attached to the two manometers (A) and (B). The two small pipes (a) and (b) are both supplied with a stop cock.



Testing Traps Under Plumbing Fixtures.

How a Test is Made.

Now that the plant is known let us follow a test on a trap: The cistern is full of water, and the four connections on the 4-inch pipe are tightly closed, the valve (2) is shut and so is the cock (B) of manometer (B). I open valve (1) a few seconds and then close it. The water from the cistern running down full bore of the 3-inch pipe causes a vacuum in the portion of the 3-inch pipe F below valve (1) and in the 2-inch branch (C) as well as in the small pipe (a) of manometers (A).

To fill that vaccum, the atmospheric pressure forces the mercury to rise in the graded tube (a) of manometer (A), until the seal of trap (D) is broken; then the mercury falls back to its level. The highest point the mercury touched was mark 4 on the graded scale of manometer (A).

The conclusion to be drawn from that fact is that the seal of trap (D) is capable of resisting the pressure given by a column of mercury 4 inch. high. All traps can, therefore, be graded as regards their force of resistance to syphonage.

The test just made on trap (D) can be repeated on the water closets (H and G) by simply shutting cock (a) and opening (b). Moreover, the 2-inch ventilation pipe with its valve (2) serves to demonstrate the necessity of a vent pipe at the end of a long horizontal line of soil pipe.

The force of resistance of the traps of closet (H and G) is indicated on the grade scale of manometer (B).

EFFECTS OF DAMP ON CHIMNEYS.

In the Gesundheits-Ingenieur, Professor Nussbaum calls attention to the influence of the weather on exposed walls of chimneys, and he shows that great injury is caused to the draft by the percolation of moisture, and by the neglect of precautions to render the outer walls impervious. He therefore advocates the employment of a damp-proof coating on the exteriors of all chimneys, and the addition of a hood, or covered cap, at the top, so as to exclude the rain. It is shown that when moisture reaches the inner wall of the chimney much of the useful effect of the up-rush of hot air current is expended in converting the water into vapor, and, owing to the lateral cooling of one side more than the other, in the case of lofty chimneys, eddies and counter currents are liable to be formed which greatly reduce the draft. The professor states that, as the results of practical experiments, he has found that the cost of protecting the chimney in the manner be advocates will speedily be repaid by improved efficiency.

Instalation of Gas Water Heaters

J. F. Brady, Washington, D.C., Discusses the Conditions Which Have Resulted in Many Deaths and the Means to Improve Matters.

Many articles have been written on gas hot-water heaters and how they should be constructed and connected—yet I dare say that few, if any, cities cause the installation of such heaters to be inspected before being placed in service.

I make this assertion because they are not required to be inspected here in Washington, D.C., and this city prides itself on having one of the best set of plumbing and gas-fitting regulations in America.

While the subject of hot-water heaters has been discussed for some time—especially gas—yet no definite action was taken until about a month and a half ago three persons were killed by carbon-monoxide—the deadly gas caused by improper combustion. Taking this as sufficient reason, the Inspector of Plumbing recommended that the gas-fitting regulations be amended to require every gas hot-water heater to be provided with a flue to carry all noxious odors and gas to the outer air; that no pilot light be permitted on the heater, and, that each heater be supplied with a door which would have to be opened to see and reach, and light the gas outlet.

Immediately after the triple tragedy the Bureau of Chemistry here placed the death-dealing heater under test and have made an exhaustive study of the conditions and possibilities. Their report embodies the recommendations of the Inspector of Plumbing and it is most probable that action will be taken in the very near future to require the heaters to conform to the suggested changes and that their instalation be inspected before the flow of gas is connected thereto.

A copy of the Bureau of Chemistry report follows:

Tests With the Heater.

The conclusions drawn from the experiments by the Bureau of Chemistry are as follows:

"1. When the gas boiler heater was run in a manner exactly similar to the manner it was run in the original flat where it is supposed to have killed three persons, it gave off enough carbon monoxide to destroy life, as shown by analysis of the escaping gases, analysis of the air of a room and experiments on a guinea pig.

"2. When the gas boiler heater was run in the most adverse way—i.e., with a constant stream of cold water passing through the coils—the evolution of carbon monoxide was greatly increased, so that the apparatus was much more dangerous (such a condition as the above might arise when a housewife was drawing water from the hot-water spigot while the gas boiler was turned on).

"3. When this particular gas boiler heater was run in the most favorable way—i.e., with the air inlet entirely open and only a very small amount of water passing through the coil—enough carbon monoxide was evolved to pollute the atmosphere of an ordinary living room to such an extent as to be probably injurious to health.

"4. When this particular gas boiler heater was run in the most favorable way, to the air intake, but with a cold stream of water passing through the coils, enough carbon monoxide was evolved to probably cause death in a closed room.

"5. When a new gas boiler heater, built on exactly the same plan as this heater was run under the most favorable conditions of air intake, etc., the amount of carbon monoxide evolved was very small, and would probably cause little or no discomfort to the ordinary healthy individual in the ordinary living room.

"6. When a new gas boiler heat , built on exactly the same plan as this heater, was run under adverse conditions as regards air intake, the amount of carbon monoxide evolved was certainly sufficient to cause ill-health.

Points Suggested by the Tests.

"The following points are suggested by the above experiments:

"1. Even the best gas boiler heater when used by the ordinary citizen who does not understand the intricacies of air intake, etc., and placed in a room without a pipe to the open air, may become dangerous to health, if not to life.

"2. Statement No. 1 is doubly so when the heater is used by ignorant servants.

"3. No gas boiler heater should be allowed in any home unless it has a pipe to the open air or a flue which carries off all gases.

"4. Every gas boiler heater should have an easily removable jacket so that the coil could be frequently cleaned of accumulated soot.

"5. Every gas boiler heater should have an isinglass window at the side so that the person lighting it can see if the flame has struck back or is burning yellow, and so take appropriate measures to avoid such occurrences.

"6. Gas stoves were not tested in the above series of experiments, but there is every reason to believe that under adverse, ignorant and careless handling they might also give carbon monoxide hence it would appear that stoves with solid stops arranged to carry off all products of combustion through a pipe into the open air would be highly desirable from a sanitary standpoint."

THE FREEZING OF WELLS AND PUMPS.

The freezing of wells is practically confined to districts where the air temperatures frequently go considerably below zero and where the materials penetrated are either porous or contain actual openings and passages through which the air can circulate. A study of the phenomena on the part of the United States Geological Survey shows that they are closely connected with barometric changes. The direct cause of the freezing seems to be an indraft of cold air at periods of high barometer. Change of weather, reversing the direction of the air current, produces thaw. In open wells, where air obtains access through the soil and at the junction of curb and cover, a cement cover should be tightly fitted to the curb, and the curb itself should be coated with cement for some distance below the surface. In drilled or double-tubed driven wells the current of cold air drawn in at periods of high barometer between the outer and inner casing near the surface and passing out in a porous bed at the bottom above the water level will cause freezing if the water is pumped so that it stands in the inner tube above the lower end of the outer casing; and a long-continued current of such cold air may cause freezing of the ground water about and in the well tube. For this condition it is suggested that the space between the outer and inner tube near the surface be packed with some impervious material. A filling of cement resting on an improvised plug is probably the most effective. The home-made rag packing sometimes used is too porous to serve the purpose. The same treatment is suggested for wells with leaky casings, for driven wells passing through rocks porous enough to permit the passage of large currents of chilled air during periods of high barometer, and for wells in which the outer casing ends in some cavern or open passage; that is, the space between the well tube and the pump tube near the surface should be tightly plugged with impervious material.— Metal Worker.

NEWS OF THE TRADE IN CANADA

Durand Freres, plumbers, Montreal, have registered.

Larin & Guerard, plumbers, Montreal, have dissolved.

Lavoie & Frere, plumbers, Montreal, have registered.

A. Kyle & Son, plumbers, Montreal, have dissolved.

Benoit & Frere, plumbers, Shawinigan Falls, Que., have assigned.

Dundas will build a public library to cost in the neighborhood of $20,000.

The new fire hall built at a cost of $14,000 has been completed and taken over by Saskatoon.

Robert Ross has started in the plumbing business on his own account at Leamington.

The St. Thomas city council will take up the matter of a plumbing inspection early in the new year.

G. A. Poirire, Waterloo, Que., has sold out his plumbing and stove business in that place to Alfred Beaugord.

The Sachs Plumbing Co., Hespeler, have been awarded the contract for two large plumbing contracts in Salem.

Fred Jenkins, a member of the Toronto Journeymen Plumbers' Union, is a candidate for alderman in Ward 5.

Charles Morrison, of the James Morrison Brass Mfg. Co., Toronto, has been spending a fortnight holidaying in Chicago.

K. W. Fessenden, who conducts a plumbing business at Waterloo, Que., is adding a hardware department to his store.

Moose Jaw has a new septic tank, which can accommodate 125,000 gallons per day. It replaces the old 30,000-gallon tank.

The Standard Valves, Limited, capital $20,000, Ottawa ; provisional directors, Hugh Burnet, Fred W. Mosgrove and R. S. Smart.

McDonald & Henry, Stratford, have received the contract at $550 for the instalation of a new system of plumbing in the Separate school there.

Conwright & Bell, gasfitters and electricians, have opened an office in Chatham, Ont. Jos. Conwrigot, the senior partner, was formerly with the Chatham Gas Company.

Percy C. Mansell, of Purdy, Mansell & Co., Toronto, got a fine Christmas box this year. Santa Claus came back on Dec. 26 and presented him with a bouncing baby boy.

Fire recently gutted the interior of R. Kinsman & Son's plumbing shop, Halifax. The firm's stock was ruined, the principal damage being by water. The loss is covered by insurance.

Angus Groff, formerly on the sales staff of Cluff Bros., Toronto, has accepted a position with the Forwell Foundry Co., Berlin, who are again taking up the manufacture of soil pipe.

A Chicago firm has offered to instal the whole of the sewerage system in Ladysmith, B.C., and take up the city debentures in payment. The city council has the matter under consideration.

T. J. Minnes & Co., Brantford, have the contract for supplying and instaling the heating, lighting and plumbing arrangements in the newly-constructed wing of the Ontario Institute for the Blind.

James H. Doody, plumber and steamfitter, St. John, N.B., has returned from a visit to Cuba. Mr. Doody is interested in the new Havana-Boston-St. John steamship service which has been proving so successful.

By-laws for the modernizing of the Victoria, B. C., city hall at an outlay of $35,000, and the extension of the sewer system at a cost of $50,000, will be submitted to the ratepayers at the municipal elections in January.

R. Dunn & Co., of Port Hope, who have been in business for 36 years, have had the best business during the past fall since they have been in business and state they would not like to be without Plumber and Steamfitter.

The heating system of the Carnegie library, Ottawa, which has been undergoing repairs under the direction of Currie & Livack, has been tested and proved highly satisfactory. The plant was improved by lowering the pump, making alterations in the boiler room and instaling more radiators.

The Forwell Foundry, Ltd., Berlin, capital $50,000, has been incorporated to take over the Forwell Foundry Co. and manufacture machinery and plumbers', gasfitters and steamfitters' supplies. Among the incorporators are W. Forwell and Ira Weber, Berlin ; Angus Groff and C. Liphardt, of Waterloo.

William R. Hammond, well known to plumbers on account of his connection with the Dominion Radiator Co., Toronto, and more recently superintendent of the Taylor-Forbes Co., Guelph, passed away in Battle Creek, Michigan, on Dec. 16. He leaves a wife and five small children.

Owing to the recent natural gas explosions an inspection of the gas mains has taken place in Brantford. It has been found in all places inspected that the mains were in good condition, and the gas company are now putting in a device that will to a large extent eliminate the leaking of gas. This device has been installed on 3,700 services which have been put in this year.

Maurice Murphy, for the past two years superintendent of the plumbing and pipe fitting department of the Dominion Iron & Steel Company, Halifax, has been promoted to the position of assistant to the mechanical superintendent, Mr. Sinnamon. The promotion is a very popular one among the employes of the plant.

W. E. Skinner, Winnipeg, has applied to the board of works for a franchise to lay steam heating pipes in the city streets for the purpose of heating buildings. Before granting the franchise the council has asked Mr. Skinner to furnish an estimate of the cost of heating by his system half a dozen of the large buildings of the city, selected by the committee.

Some trouble was experienced lately by Saskatoon plumbers during a short spell of severe frost. Owing to the lateness of the building season several residences were not completed when the frost set in. In two or three cases where water heating systems were installed the water was allowed to freeze up over night with the result that radiators and pipes were burst and destroyed.

A writ has been issued against the municipality of Perth by the Canadian Electric and Waterworks Company for $3,000 and interest, an account which the plaintiffs claim for three years' hydrant rental. For two years the hydrant rental was collected from the ratepayers and spent for other purposes but for this year it has not been raised. Now the climax has come and the case will be thrown into the law courts.

The Provincial Board of Health has approved the plans of the City of Toronto for a trunk sewer on the sewage disposal system, without any suggestion for betterment. These plans provide for the emptying of partially treated sewage in the lake in twenty feet of water at a distance of 1,500 feet from the shore. A deputation from St. Thomas was given information regarding an up-to-date sewage disposal plant which it is proposed to construct there. It was decided to investigate a complaint made by Guelph township to the effect that sewage from Guelph City is polluting the Speed river. A by-law of the Town of St. Mary's regarding cemetery alterations was approved.

The Halifax Plumbers' and Steamfitters' Union is planning for the winter season a series of interesting talks, illustrated by actual experiments, on the many plumbing problems which are always confronting the workmen of that craft. It is believed by the members of the union that periodical meetings for the purpose of exchanging ideas and ex-

periences, will result in increasing the efficiency of the workmen. They intend to invite the apprentice to take part in the proposed programme. The union is also considering a proposition to protect its members during any business depression, by inaugurating an out-of-work fund, which will be practically an insurance against loss of employment during dull seasons.

Ald. Westman, of Westman Bros., Chatham, Ont., voiced a vigorous complaint at the council meeting recently concern,ng the manner in which, it was alleged, other local plumbers and gasfitters were apparently sidetracked in favor of the Chatham Electrical & Machine Co. While large contracts are, of course, let by tender, there are frequently small items, involving expenditures ranging from $25 down, which it is thought inexpedient to advertise. As a rule, these contracts have been let by the City Engineer, and Ald. Westman declared that the Chatham Electrical & Machine Co. seemed to get all this sort of business, to the exclusion of other firms, which were not even given an opportunity to tender. While, in such cases, advertising through the papers would probably add unjustifiably to the accounts, plumbers, tinsmiths and others feel that every man in the city engaged in the line of work for which a small job is to be let, should be notified by letter and asked to submit figures.

ASSOCIATION NEWS.

George Cooper, Church Street, Toronto, national vice-president for Ontario, will send a circular letter with return post card to the trade in Ontario the first of January. He wants answers to a couple of questions and he asks the courtesy of a reply, whether favorable or otherwise. George says he wishes all in the trade a prosperous New Year and feels sure most of them will have it.

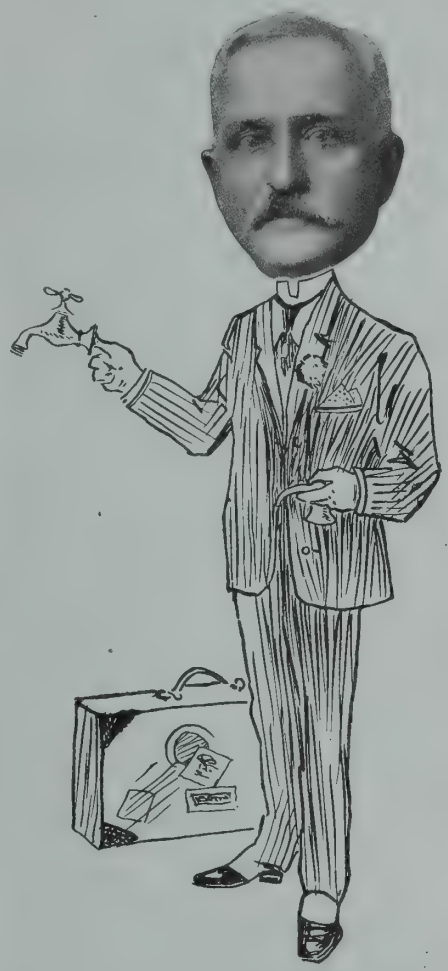
The Toronto Master Plumbers' Association will meet on Jan. 5 and 19 (the first and third Tuesdays) in Room 4, Temple Building, to take up active work again after the holidays. The discussion upon the revision of the plumbing by-laws will be taken up again. This is a live topic and the attendance should be large.

NEW SOIL PIPE WORKS.

The Standard Ideal Company, Port Hope, expect to begin operating their new soil pipe foundry in the near future. The process of manufacturing is continuous molding and pouring, the molds being set upright in the floor. The method of operating will be described in these columns in an early issue.

WHO'S WHO IN THE PLUMBING AND HEATING TRADES.

Louis A. Payette, sales manager of Warden-King, Montreal, is leaving this firm at the end of the year after eleven years' service, and will locate (office and sample rooms) at 83 St. James St. west, Montreal, ground floor, as manufacturers' agent, representing lines in plumbing, heating and hardware specialties. Mr. Payette has secured some important agencies, including those of Somerville, Limited, Toronto, and A. L.



No. 1.—LOUIS A. PAYETTE, Montreal.

Swett Iron Works, Medina, N.Y., and will travel all over the Dominion.

Mr. Payette was for several years with H. R. Ives, Co., Montreal, and the James Smart Manufacturing Co., Brockville, and his long and varied experience in the lines above mentioned, and his strong connection all over Canada should qualify him to handle the business successfully.

CONVENTION OF GAS MEN.

The fourth annual convention of the National Commercial Gas Association was held at Chicago Dec. 7 to 11.

This association was formed in 1905 at New York by a few representative gas companies, and it now has on its membership roll no less than 1930 separate and independent gas companies —aiming to accomplish the standardization of the gas industry and promoting a healthy competition between the gas and gas appliance concerns of the United States.

At each of their annual conventions the different gas appliance and supply houses avail themselves of the opportunity to show their respective products with the result that the "Gas Show," as it is commonly known, is the annual market fair of this industry. Over $5,000,000 of business (that is purchases of appliances etc.) was consummated during this last show.

KING SOLOMON INVENTED BATH ROOM.

With Chronicles as its authority, the Plumbers' Trade Journal says that the bath room was an invention of King Solomon, who put it in use a thousand years before the Christian era. It was sinful to enter the sanctuary unless the body was perfectly clean, and for the accommodation of priests a bathtub was erected at the entrance to the temple. It was said of Solomon: "He made a molten sea of ten cubits from brim to brim round a compass and five cubits the height thereof, and a line of thirty cubits did compass it round about." According to the measurements, the Solomonian tub was 45 fet in circumference at the top and 6½ feet deep. It rested on carved figures of oxen and was of solid brass cast in one piece, decorated with a floral design. Connected with it there were 10 small sinks, which were used for washing the offering.

NEW NON-LEAKABLE TAP.

R. G. Zahalan, of New Liskeard, Ont., has applied for the patent of a durable and non-leakable water tap. The idea is most ingenious and yet very simple. A round steel ball fits into a seat in the brass tap stopping the flow of water until forced down against the pressure and out of the way by the handle. The pressure of one's hand opens the tap and the moment the weight is removed the ball jumps back into place and the water flow comes to a dead halt. An advantage of the tap is the fact that it has no leather or rubber washers to wear out and that when the ball has worn itself to a seat in the brass it would be absolutely non-leakable. In addition to this the tap could not be left running. These points make it a great saver. Mr. Zahalan has applied for the American and Canadian patents and is at present negotiating with a view to putting the article on the market.

CONTRACTS AND BUSINESS OPPORTUNITIES

Municipal Undertakings.

Barrie's sewerage plans have been approved by the Provincial Board of Health.

Toronto waterworks will, it is expected, yield a surplus this year of about $50,000.

The Council of Revelstoke will spend $10,000 to complete the civic power and light plant.

The Town of Hawkesbury, Ont., will spend $30,000 on a waterworks and sewage system.

The British Columbia Electric Railway have inaugurated an electric lighting service at Chilliwack.

The ratepayers of Fergus, Ont., will vote on January 4 on a by-law to issue $12,000 concrete pavement debentures.

The ratepayers of Stratford will vote on January 4 on a by-law to expend $15,000 on parks and lake improvement.

An agitation is on foot to obtain a water supply for Richmond Hill, Ont., from the nearby elevation of the Ridges.

Victoria has increased its water rates all around and now imposes three cents a foot frontage tax for the service pipes.

The Ontario Railway and Municipal Board have approved a by-law to raise $28,000 for sewer construction at Fort Frances.

The Provincial Board of Health has deferred action with respect to the proposed waterworks at Weston and Markdale.

The ratepayers of Windsor will vote on January 4 on a by-law to issue $9,000 5 per cent. 20-year public park debentures.

A by-law to raise $40,000 for the construction of septic tanks will be submitted to the ratepayers of St. Thomas in January.

On January 4 a by-law to expend $7,000 on sewer extensions will be submitted to the ratepayers of Niagara Falls, Ont.

Tenders will be called in the near future for the construction of the Winnipeg Power Co.'s electrical power works at Point du Bois.

The ratepayers of Barrie will vote on January 4 on a by-law to issue $12,000 4½ per cent. 20-year debentures for electric light purposes.

The City Engineer of Toronto has been authorized by the Board of Control to purchase 281 water meters, at a cost of $10,995.60.

The ratepayers of Sarnia will vote on January 4 on a by-law to issue $5,500 5 per cent. 10-year town hall debentures. J. D. Stewart, town clerk.

Sudbury ratepayers have approved a by-law to issue $19,200 twenty-year electric light and waterworks debentures. S. Fournier is town clerk.

Stratford ratepayers will vote on a by-law to take 1,000 horse-power from the Hydro-Electric Power Commission at $27.10 per horse-power.

The International Heating and Lighting Co., Cleveland, have been granted an extension of time in which to commence operations in Edmonton.

The ratepayers of Galt will vote on January 4 on a by-law to issue $10,000 4½ per cent. 15-year debentures, issued for street improvement purposes.

At a meeting of Ottawa City Council it was decided to submit a by-law to the property owners in January to raise $60,000 for public playgrounds.

A by-law has been passed by the Pembroke ratepayers authorizing the expenditure of $10,000 for electric pumps for the waterworks pump house.

A by-law will be submitted to the ratepayers of Stratford at the municipal elections in January to issue $25 000 4½ per cent. 30-year sewerage debentures.

The Provincial Board of Health have approved of the plan for waterworks at Pembroke providing the intake pipe extends for 5,000 feet into the Ottawa River.

The ratepayers of Toronto will vote on January 4 on a by-law to issue $215,000 4 per cent. 40-year debentures for the extension of Wilton Avenue across the Don River.

At a meeting of the Toronto Board of Health a deputation from St. Thomas was given information regarding a sewer disposal plant which it is proposed to construct.

A by-law will be submitted to Hamilton ratepayers on January 4 to issue $300,000 4 per cent. 20-year debentures for permanent roadways, also $65,000 4 per cent. 20-year sewer debentures.

The sewage disposal plant of Toronto will be pushed ahead with all possible speed. A site has been decided upon and the general scheme for the tanks has been arranged.

The Canadian Electric and Water Power Co. have issued a writ against the Town of Perth, Ontario, for $3,000 for hydrant rental for 1905-6-7. The town will fight the action.

The Brantford waterworks continue to be successfully operated under municipal ownership commission. The annual report shows this year to be the best in its history. The net earnings are $51,793.68, being $5,600 in excess of last year.

Within a few days the mains of the Seymour Creek water system will be connected with the Vancouver city system and the available water supply of Vancouver will, by that action, be doubled, giving a service in the field capable of meeting the needs of 180,000 people.

City Engineer Edington, of Moncton, N.B., has just presented a complete report of the water and light committee as to the advisability of increasing the city's water supply. The plans submitted would entail an approximate expenditure of $217,000, made up as follows: Embankment, including gate house, wasteway, etc., $87,000; 20-inch leading main, $87,400; cleaning bed of reservoir, $5,500; diversion of Alexander Road, $1,200; land and damages, $5,000; contingencies, $6 000; total, $192,100; pumping station, $25,000, making a grand total of $217,100.

General Building Notes.

The Imperial Bank will build a branch in Bolton, Ont.

Lewis & Sills, Vancouver, are erecting a $6,000 warehouse.

The building permits in Moose Jaw this year total $478,925.

S. Gintzburger, Vancouver, is erecting a brick store to cost $9 000.

To date $300,000 in building permits have been issued in Brandon.

The Grand Trunk Pacific are building a fine new depot at Watrous, Sask.

A $500,000 apartment house will be built in Toronto on University Avenue.

The building permits in Aylmer, Ont., for the past year amounted to $60,000.

The East Methodist Church, Saskatoon, will build a new Sunday school room.

W, & J. Wilson will erect a business block at Victoria, B.C., to cost $25,000.

A $250,000 apartment house will be erected in Montreal on the Cote des Neiges Road.

H. W. Hudson will erect a three-storey business block in Prince Albert, to cost $6,000.

Mrs. J. W. Munro will rebuild her business block in Pembroke, which was recently destroyed by fire.

The Canadian General Electric Company, of Peterboro, will erect a $70,000 building next spring in Vancouver.

The corner stone for the new building of the Household Science Department of Toronto University has been laid.

Contracts have been awarded for a three-storey and office building, to be erected in London for the London Loan Company.

The contract for the erection of the market building at Three Rivers, Que., has been awarded to Mr. Bigras at a cost of about $40,000.

St. Catharines has accepted the gift of R. W. Leonard of $3,500 for a cottage hospital for tuberculosis. The building will cost $10,000.

The ratepayers of Niagara Falls, Ont., will vote January 4 on a by-law to expend $8,300 on improving the city fire halls, and $3,000 on the erection of an armory.

The ratepayers of London will vote on January 4 on a by-law to issue $6,000 4½ per cent. 30-year debentures for the erection and equipment of free swimming baths.

The Y.M.C.A. building at Moose Jaw will probably be completed next year at

a cost of about $40,000. To date $14,000 has been expended, $4,000 for the site and $10,000 for the basement.

C. H. Prest, Kelliher, Sask., will at once rebuild his hardware store, which was recently destroyed by fire. The new building will be of concrete blocks, with metal roof.

The Vokes Hardware Company have been granted a permit to erect a five-storey and basement warehouse on Queen Street East. Toronto, at an estimated cost of $35,000.

Recent building permits issued in Toronto include: Franklin & Son, alterations to store, $3,000. Ryrie Bros. and Webster, alterations to stores and dwellings, $10,000; D. Landsberg, pair dwellings, $3,600; A. W. Waters, three dwellings, $5,900; R. W. Harrison, dwelling, $2,600; W. A. Goy, three dwellings, $6,000; Robertson & White, brick dwellings, $6,500; Sim & Smart, dwelling, $5,000; H. E. Bell, three dwellings, $8,500; C. F. Barton, dwelling, $5,000; A. Draper, dwellings, $5,600.

The past year has been the greatest building one in the history of Fort William, the total amount represented by new buildings being $1,500,000. Some of the more important items were: Elevator, $500 000; school and addition to schools, $105,845; one church and church alterations, $85,000; hospital, $75,000; business blocks, $327,000; brick veneer dwellings, $121,700; frame dwellings, $109,600.

Recent building permits in Toronto include:—John T. Aggett, dwelling, $6,000; Harvey Quilting Company, alteration to factory, $4,500; J. McKenney and J. E. Johnson Co., pair stores and dwellings, $7,000; J. Mills, pair dwellings, $5,000; E. Elliott, pair dwellings, $3,800; F. A. Jacobs, dwelling, $6,000; W. J. Herod, dwelling, $5,000; Henry Durke, dwelling, $5,000; Woodgreen Methodist Church, 1 storey, Sunday school, $5,000; Geo. W. Gouinlock, dwelling, $8,000; W. J. Webb, pair dwellings, $5,000; W. E. Watson, two detached dwellings, $8,000; J. F. Stanton, dwellings, $6,000; R. Tew, pair dwellings, $6,500; J. D. Allen, apartment house, $10,000; A. Waters, three dwellings, $5,100; Almond & Page, pair dwellings, $7,000.

Public Buildings.

Dundas is building a new High school.

Clayoquot, B.C., will erect a public hall.

Dundas is building a new High School.

Dundas, Ont., will erect a Carnegie library.

Vancouver will have a $30,000 isolation hospital.

St. Catharines will erect a new $25,000 public school.

The new post office at Medicine Hat is about completed.

Brantford may build a new $100,000 Collegiate Institute.

A new Roman Catholic Church will be erected in Ottawa.

The G.T.P. will build a $12,000 station at Wainwright, Sask.

The Church of St. John the Evangelist, London, will erect a new building.

Moose Jaw will build a new fire hall at a cost of $35,000, in the near future.

Montreal will erect a $200,000 building as recorder's court and police headquarters.

Contracts have been awarded for the new Carnegie library to be erected at Mitchell.

It is stated that a New York syndicate will erect a $200,000 sanatarium at Watrous, Sask.

The new isolation hospital London is nearly completed. The cost of the structure was $52,000.

Brantford ratepayers will vote on a by-law to raise $100,000 to erect a new Collegiate Institute.

The post office building, Kingston, is to be extensively enlarged, at an estimated cost of $30,000.

Tenders will be received up to December 26 for the erection of a Land Titles Building, Saskatoon.

The School of Mining, Kingston, will ask the Provincial Government to erect a building for mining and mineralogy.

The B.C. Government will shortly let tenders for the new Central Insane Asylum building at New Westminster.

The ratepayers of Haileybury will vote on January 4 on a by-law to issue $5,000 five per cent. 10-year fire hall debentures.

The Salvation Army has decided that two new hospitals shall be built in the West, one in Calgary and the other at Edmonton.

A school building will be erected and equipped at Strathcona, at a cost of $50,000, bonds for which have been already marketed.

A by-law to raise $75,000 by debentures for the erection of a garbage destructor will be submitted to the ratepayers of Vancouver on January 14.

The Ontario Cabinet has under consideration extensions to the Parliament buildings. It is proposed to erect a new fire-proof library, and also a delegation hall.

At the municipal elections in London the citizens will vote on a by-law to raise $5,000 for the erection of a tuberculosis hospital.

Andrew Carnegie has made an offer to erect a library building at Preston providing the town will supply a suitable site and guarantee its maintenance. In all probability a $10,000 building will be erected.

GAUGE GLASSES.

The catalogue of John Moncrieff, manufacturer of the Perth Water Gauge, Perth, Scotland, shows the extensive lines of gauge glasses, glass lubricators, washers, cutters, etc., manufactured by the firm. The new gauge glass, which has recently been perfected and introduced on the market under the name of "Unific," is the result of many years' research and prolonged experiments. This new tube does not become corroded or encrusted even at very high pressures, and withstands sudden and extreme variations of temperature. The manufacture of gauge glasses is a very large and important branch of the firm's business, and has been brought to a state of such thorough organization in all its details that the firm are able to produce the highest quality at the lowest prices. John Moncrieff is represented in Canada by W. J. Wall, 47 Bleury Street, Montreal.

WATER PUMPED BY ITS OWN GAS.

A system of separating natural gas from water, devised by a Los Angeles hydraulic engineer, is being successfully used to pump water from a large flowing well, situated between Redono and San Pedro, Cal. The well yields a heavy stream of water with much natural gas running through it, and it is this gas which is being transformed into units of power to drive the engine.

The gas and water are separated in a large iron tank, which at its trial sent a considerable volume of gas into the air, while 1,000 gallons per minute of pure water was carried to the reservoir. The gas is carried to the engine by suction.

The device is expected to render waste lands productive and add much value to tracts which hitherto have not been irrigated on account of the great quantity of marsh gas in the water strata.

Speaking of jokes about plumbers, the Plumber (London, Eng.), in a recent issue said: Notwithstanding the gravity of the object matter with which his craft is concerned, and which, in fact, gives the craft its name, there is no one who comes in for so large a share of jokes from the frivolous and the funny as the plumber. Why this should be it is difficult to guess; but the fact is beyond dispute. From the prince of jokemongers downwards—often very perceptibly downwards, and often in a rapidly descending degree—every comic scribbler (save the mark!) thinks himself privileged, directly the hard weather sets in, to reproduce the old joke of the burst pipes and the imperturbable plumber. At the beginning of the current Lent season, a Paddington clergyman announced as the subject of his discourse, "Out of Plumb"; and as it was to be preached at a men's special service, the impression got abroad that the topic to be dealt with was unemployment among plumbers. In these days of profound research, it would be well for some inquiring mind to devote itself to the question as to why these jokes should be reserved for the plumber—why, in fact, he should be looked upon as "out of plumb," rather than "on the square."

CONSTRUCTION OF A CESSPOOL.

The following method to build a cesspool to receive sewage from an ordinary house having a four-fixture plumbing instalation is given in "Carpentry and Building."

The accompanying sketch shows a sectional view of a septic cesspool which may possibly afford a solution of his problem. The main points are that the sewage is delivered by a sewer pipe from the house into a water tight chamber, where mineral matter and other substances which will not dissolve may gradually settle to the bottom, and any grease, such as would be delivered from the kitchen sink, may rise and float on the top, leaving an intermediate portion with clear liquid, the latter to be carried away as fast as fresh supplies of sewage arrive. It is suggested that the space surrounding the water-tight pool should be filled with broken stone, and that this broken stone region be extended downward by means of a dry well to some substratum containing large size gravel.

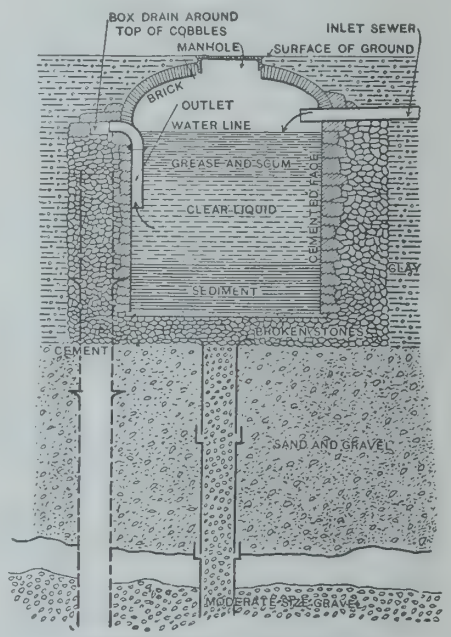
The idea is that the sewage on being delivered to the pool is given a chance to liquify and stratify, the grease rising to the top, as mentioned, and the mineral matter falling to the bottom, leaving clear liquid between. The use of broken stone will give the liquids a chance to gravitate to the gravel stratum, where the liquid wastes can leach or otherwise become purified. It is essential that the outflow pipe from the pool should take from the intermediate or clear liquid point as indicated, and it is desirable to have the discharge into the broken stone region take place in an open channel or drain which can extend around the pool.

In providing such a scheme for sewage disposal it will be necessary first to drive the well until proper size gravel is obtained, the boring probably showing that after the clay is passed through the sand and gravel stratum is reached, and that below this comes gravel with the stones as large, say, as hens' eggs. Of course if such size gravel is not reached after a reasonable attempt a septic cesspool, with a large amount of broken stonework surrounding it, would doubtless serve for a considerable time..

The dry well is shown constructed of tile piping, and its interior is filled with broken stones. The idea of the broken stone is to give a maximum amount of aerating surface should it be possible for air in any way to reach them, and also to allow the liquids to reach leaching levels gradually rather than in great flooding quantities, which might result in clogging. An object in having the outflow dip into the clear liquid section is also to prevent clogging of the stonework.

It is obvious that an arch top such as shown is unnecessary, but it is desirable to have some means at the surface for reaching the pool should for any reason the amount of sediment grow so great as to need removing. However, it may be stated that an ordinary septic tank, which provides for a separation of sediment and also of grease and scum from the clear liquids, does not show that the sediment clogs in any great quantity and that cleaning is not necessary for years at a time.

Some idea of the size of the pool may be gained in the following way: Suppose with kitchen sink and bath room equipment and the like 25 gallons of water are used per person per day. For a family of six persons this would mean 150 gallons per day, and as there are



Suggested Application of Septic Cesspool.

7½ gallons in a cubic foot, this would mean that the total daily supply of water is about 20 cubic feet. A pool 4 feet in diameter, with its cement water tight bottom 7 feet below ground and a space allowed between the top of the liquids and the ground level of 2 feet, would probably be satisfactory, although the volume in terms of the amount delivered in a given time is yet a matter of controversy among those who know most about the subject. With these depths the clear liquid strata would probably measure about 2 feet, and as the area of a 4-foot circle is about 12 square feet, the volume of clear liquid would be about 24 cubic feet. This would mean that the tank is large enough to have its contents emptied at the rate of once every day.

The tile pipe shown dotted indicates an alternate idea of placing the dry well.

CONVERTING PEAT INTO COAL.

Of all the various systems of converting peat into a material having valuable steam raising and heat generating powers, the Swedish system, known as the Elkenberg process, seems to give the greatest promise of satisfactory results.

The new process is described as wet carbonization as distinct from dry distillation. The latter has a destructive effect upon the peat, destroying its true character. The valuable oils are completely eliminated from the stable matter with the elimination of the water, and consequently the fuel obtained has its heat value depreciated. With the Elkenberg system the oily matters are preserved in the substance, so that when briquetted a dense, hard, black fuel not unlike coal, both in appearance, weight and texture, is produced.

In the process the peat, as it is torn from the bog by means of mechanical excavators, is thrown into a pulping machine where it is disintegrated, and water driven off. It is then forced in a continuous steady stream through a special type of oven by means of a centrifugal pump. In this retort the peat is subjected to a temperature of about 330 deg. F., and it becomes gradually carbonized.

Carbonizing completed, the pulp is passed to a press where the water is pressed out, and at this point the 87½ per cent. of moisture which was present in the pulp upon entry to the retort has been reduced to between 8 and 14 per cent. This remaining proportion is removed by submitting the carbonized peat to a final drying by means of the waste heat from the carbonizing oven.

The finished peat briquettes have a black glossy appearance and are dense. When burned they retain their form until consumed, give a long, clear flame of intense heat without smoke, and leave but a minimum ash. From various practical tests that have been made with railroad locomotives and for other purposes it is reported that this peat coal compares favorably with coal. Six pounds of peat-coal are equivalent to about 5 lbs. of coal. Bulk for bulk, the briquettes represent approximately the same heating value as coal, as a ton of coal occupies from 42 to 45 cu. ft. of space, and a ton of peat-coal but 30 cu. ft. The cost of production by the Swedish system is at present a little over $2 per ton, but this figure may be reduced when the capacity of the plant is made larger.

The ratepayers of Vancouver will vote on January 14 on a by-law to raise $187,000 debentures for school purposes, also $26,000 for school board offices, store room and equipment.

BEAVER DIE STOCK.

The die stock is intended to meet the requirements of a small tool and threads the four smallest standard sizes of pipe ¼-inch, ⅜-inch, ½-inch, and ¾-inch. without removing the chasers from the

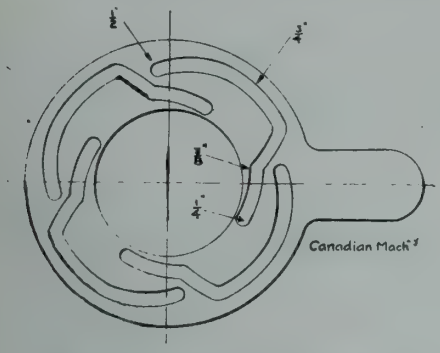


Fig. 1.—Plan of Bottom Cam.

stock. The difference between this tool and the larger sizes of the same make is that in this tool two sets of chasers are used instead of only one set. These chasers are operated by a single cam so constructed as to move one set of chasers back while the other is in use. Each set is composed of four segments which are entirely separate from each other so as to be readily removed and sharpened. Fig. 1 is the plan of the underside of the cam or adjusting plate, and shows the slots which engage the pins on each chaser.

When the stock is set to thread ⅜-inch pipe the pins on chasers marked A are in the position shown by arrow (⅜) in Fig. 1, the pins on chasers marked B being held in the outer part of the slots as shown by arrow (¾). Movement of the cam towards the setting necessary to thread ¾-inch pipe brings the pins on the chasers marked B into the outer slot, thus throwing the chasers clear of the larger size pipe. Further movement of the cam plate in this direction moves the pins in chasers B to the position shown by arrow (½) while the chasers A remain unmoved on account of the slot at arrow (¾) being concentric. The clearance for the larger size pipe is further assured by placing the pins on chasers B nearer the outside end than those on chasers A.

The pointer at D coincides with indicator marks on the top of cam. The clamp at E is to hold the cam and chasers in position. A bearing plate is screwed on above the cam and serves to take up all wear.

An additional feature is the adjustable bushings to steady the stock on the pipe. These bushings, in 3 segments. are also operated by a slotted cam, the outer edge of which is heavily knurled to facilitate operations. These bushings take up any differences, however small, in the diameter of the pipe, and are held in place by a thumb-screw clamp.

The whole stock is sturdily made of malleable iron, the parts are simple and easily cleaned. The Beaver die stock, in six sizes, ranging from ¼-inch to 12-inch, are manufactured by the Borden-Canadian Company, 66 Richmond Street East, Toronto.

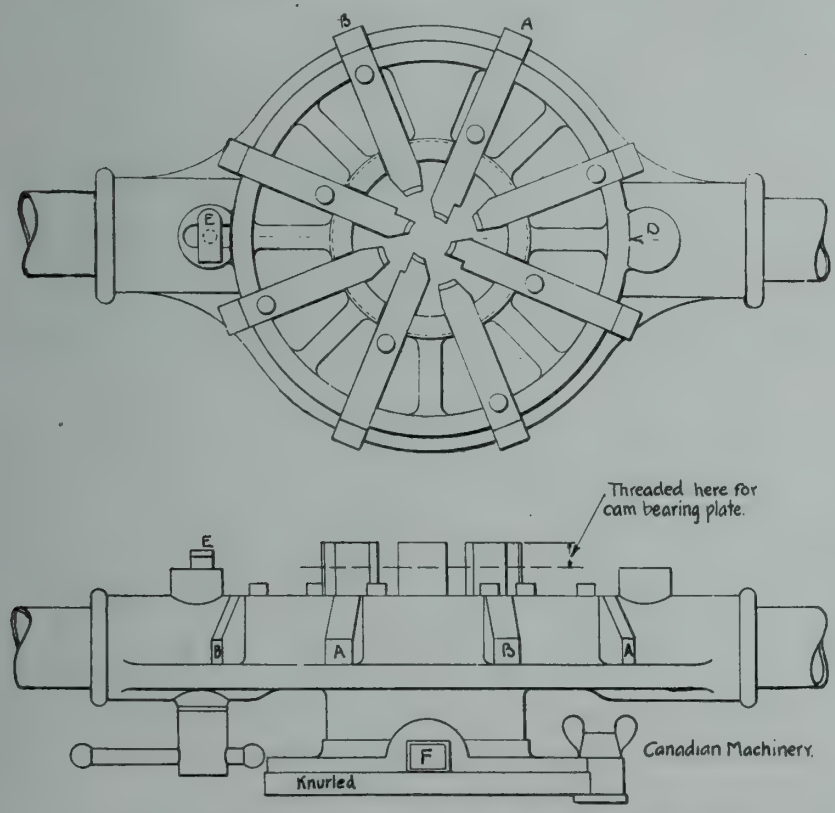


Fig. 2.—Plan and Elevation of Die-Stock (Cam Removed).

WHAT IS AN APPRENTICE?

Edward W. Quinn, St. Louis, supervisor of plumbing, wants to know what "apprentice" really means—that is, a plumber's apprentice. Mr. Quinn has been connected with the plumbing business and trade for many years, and has come in contact with many so-called apprentices.

The enforcement of the plumbers' licensing ordinance has resulted in so many complications as to the exact requirements for an apprentice, that he is determined to ask the Supreme Court of Missouri for a strict definition.

He determined to get this opinion from the highest court, because of fifteen or more cases now pending in the Police Courts for violations of the new ordinances against men who claim to be apprentices. Since the passage of the act, 1,200 members of the trade have taken the examination for license, and about 300 have failed to pass. Many arrests have been made for doing work without a license. Some of them are men and claim they are apprentices, and not subject to the requirements of the law.

Many of these claimants have been, or are at present, earning $3.50 and $4.00 per day, and Mr. Quinn is of the opinion that this wage is a little large for an average apprentice to earn.

"We are not out to prevent boys from learning the trade," said Mr. Quinn, "and I don't want it understood that I am contesting their right to do so. It will be found in every case, where I have caused an arrest to be made on this apprenticeship case, that the parties are men and have averaged more than twenty-five years of age. Not a boy under twenty-one has been molested.

"I am going to find out what an apprentice in the plumbing business really is before I am through with this fight. I have no personal feeling in this matter, and am prompted by my sworn duty to see that the law is carried out in my department, and to find out with finality I intend to carry up one of the cases now pending to the Supreme Court."

A by-law will be submitted to Vancouver ratepayers on January 14 to raise $22,000 for an addition to the jail and for establishing a police patrol signal system.

The by-law providing for the issue of debentures to the extent of $35,000 for a High School and site at Sudbury, has been approved by the Ontario Railway and Municipal Board.

PLUMBING AND HEATING MARKETS

MONTREAL.

December 28.—Trade is on the dull side, and there is little of moment to chronicle about the markets. With a small amount of building going on, not much material is being consumed while the slackness in the jobbing work also makes a great d fference. While the jobbers are not over busy, manufacturers state that factories are abating no activity. Heavy spring orders have been placed, and an effort is also being made to accumulate stock to be ready for the heavy trade that is anticipated later on. Architects state that they are full up with work and there is every indication of building being extremely good, not only in resident houses, but in large business structures. Although there is a strong undercurrent with regard to prices, no important change has yet been announced.

IRON PIPE—Conditions are on the dull side. Prices are unchanged, and we continue to quote : ¼-in. black, $2.63 ; galvanized, $3.48 ; 1-in. black, $5.11 ; galvanized, $6.76. Malleable and cast iron fittings are unchanged.

SOIL PIPE—With other lines, soil pipe is quiet. Manufacturers are reported busy on orders for spring delivery. The market is firm, and we quote :— Light, 3 to 6 in-. 60 off ; medium to heavy, 2 to 6 in., 70 off; 8 in., heavy, 40 off.

LEAD PIPE—Fair business has been done, but there is naturally not much strength to the demand. A number of residential houses have still their plumbing arrangements to be put in, and this will maintain a fair movement in lead pipe for some time. We continue to quote pipe and waste at 27½ off. Traps and bends at 50 ; calking lead at 5c per pound.

SOLDER—This line is quiet. Roofing work having fallen off, not so much solder is being used. We continue to quote 19½c for half and half, and 18½c for wiping.

ENAMELWARE —Manufacturers are busy on their spring orders, and there is every indication of strong trade developing later on. The jobbing trade is now on the dull side, and will be so for some time.

BRASS GOODS—The usual mid-winter's dullness is being experienced. Reports of higher prices are heard, but nothing definite has yet come to hand.

RADIATORS AND BOILERS — Although trade has not been so good, yet steady business has been done. The demand from residential houses in the suburbs has been excellent. There is no change in published lists, which are as follows : Radiators at 52½ and boilers at 50 and 10 off. Steam fittings are 66 2-3 off.

METALS—All metals are quiet. The primary markets have displayed a certain amount of weakness natural this time of year. Lead has declined 10c. We quote : Ingot copper, $15.50 ; ingot tin, $33 ; lead, $3.70 ; pig iron, Middlesboro No. 1, $18.50 to $19 ; Summerlee, $20. Heavy scrap red brass is 10½c ; light copper, 10½c ; heavy lead, 2½c.

TORONTO.

Toronto, Dec. 31.—The plumbing trade is now at the stage where it is looking back over the past year, and looking forward to the opening year's business. The larger master plumbers are busy and in some cases have work booked months ahead, and the outlook is decidedly brighter than it was at the beginning of 1908. Without being at all optimistic, there can be no doubt that the trade is over the hill and smooth sailing is in sight. Building permits are again in the record class, and while 1908 does not compare any too favorably with the previous year, there are many who say, and with reason, that 1909 will be a record-breaker. The buildings going up the past year were of a small dwelling class, and they were almost as numerous as during any previous season. The building of larger residences and office and public structures, however, were none too frequent, but a great improvement is sure to take place this year.

Prices remain at the old figures, though at this time of year many houses revise their discount lists. There is no announcement as yet of any change, though it is not improbable there may be some slight revision in certain lines.

BRASS GOODS—Cutting is quite prevalent, but as copper continues to firm, advanced lists are looked for soon. We still quote : Standard compression work. 70 per cent.; fuller work, 75 and 10 per cent.; flatway stop and waste cocks are 65 per cent.; round way, 50 and 10. Compression bath cocks (No. 4) are quoted at $1.50, and No. 4½ Fuller's, $1.85. Fuller bibs are 75 and 15.

ENAMELWARE—Prospects are good and present business fair. The new discounts of thirty straight and thirty and five, according to the line, go into force with the opening of the year.

IRON PIPE AND FITTINGS—Both malleable and cast fittings are being cut badly, sales at 80 per cent. for cast, and 40 off on malleables being reported. We quote as nominal prices : 1-in. black $5.11, and 1-in. galvanized, $6.76. Cast iron fittings, 70 per cent.; flanged unions, 60 ; nipples, 70 and 10 ; malleable lipped unions, 55. Malleable fittings are unchanged at from 37½ per cent.

SOIL PIPE—No change. Light pipe, 60 ; fittings, 70 per cent. Medium and extra heavy pipe and fittings are 70 per cent.

LEAD PIPE—Splendid demand exists, the weather being fine for finishing up inside new houses. Calking lead is from 4½c to 5c per lb.; traps and bends, 50 ; pipe and waste, 27½ off.

SOLDER—On a fair demand prices remain unchanged. 18½c per lb. is asked for wiping solder, and 19c for half and half.

BOILERS AND RADIATORS—During the past season quite a number of boilers went to country sections, where the farmers and vegetable and flower growers installed a number in their greenhouses. Fair business is being done at present, and an excellent prospect is looked for during this opening year.

Moose Jaw building permits show a decrease this year, the figures being $428,925; for the last two years the totals were 1906, $556,424, and in 1907, $706,573. The two largest permits this year were the Saskatchewan Flour Mills $150,000, and the new Collegiate $120,000.

Condensed or "Want" Ads.

MISCELLANEOUS.

HIGH CLASS COLOR WORK.—Commercial stationery, posters. The Hough Lithographing Co. Limited. Office, No. 3 Jarvis Street, Toronto Telephone, Main 1576. Art, good workmanship business methods.

650,000 Not one of the 650 000 retail merchants who have bought a National Cash Register would think of doing business without it. The National Cash Register Co., F. E. Mutton, Canadian Manager, cor. Yonge Street and Wilton Avenue, Toronto, Ont.

ADDING TYPEWRITERS write, add or subtract in one operation. Elliott Fisher, Limited, 129 Bay Street, Toronto.

DUPLICATING DEVICES.

IF INTERESTED in a Duplicating Machine for getting out circular letters, reports, price-lists, etc , or for printing various office forms, write for booklet and samples of work. The "POLYGRAPH" is the newest, latest and best, and sells for a lower price than the others. Is unexcelled by any similar device on the market. F.W. Tenney, Canadian Sales Agent, 123 Bay St., Room 116 Stair Building, Toronto, Canada. (tf)

REPRESENTATIVE WANTED.

WANTED in every town and village, a representative to take charge of the circulation of our various publications:—Hardware and Metal, Canadian Grocer, Financial Post, Plumber and Steamfitter, Dry Goods Review, Printer and Publisher, Bookseller and Stationer, Canadian Machinery, and Busy Man's Magazine. Good financial standing and business connection a strong recommendation. Just the position for a retired business man for his spare time. The MacLean Publishing Company, Limited, Toronto.

The Honeywell System of Hot-Water Heating

14,000 Systems in Use in America.

HONEYWELL HEAT GENERATOR

We have recently made arrangements to manufacture Honeywell Heat Generators in Canada and have arranged with the leading boiler and radiator manufacturers and jobbers of the Dominion to carry our specialties in stock.

While our Canadian representatives will give their attention to making the trade on this side acquainted with the merits of the Honeywell System of Hot Water Heating and render engineering advice to the interest of the fitters, we will not fill orders direct for our specialties, but will supply the trade entirely through the established Canadian dealers.

The Honeywell System has met with eminent success in America. It is used in every state of the Union where hot water heating is installed. It is not the coming but the system in vogue in the States, and it will be only for any fitter of Canada to try out one job according to our instructions to prove beyond question that the Honeywell System is all that is claimed for it.

Honeywell Heat Generators will cure sluggish jobs and double the efficiency of jobs where the piping and radiators are too small for the gravity system. A number of Generators have been attached to existing plants in Winnipeg, Ottawa, Montreal, St. Hyacinthe, St. John and other Canadian points with entirely satisfactory results. Let us refer you to a number of them, also to new jobs installed in the Dominion according to our instructions. Write for "Book of Plans" and "Illustrated Folders" of jobs installed in all parts of the country.

The Honeywell Heating Specialty Co.,

Plant and General Office, Wabash, Indiana

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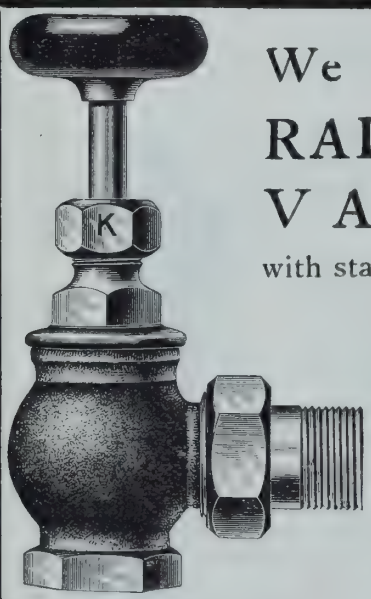

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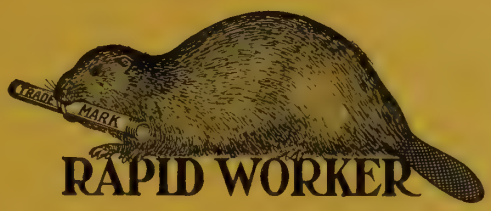

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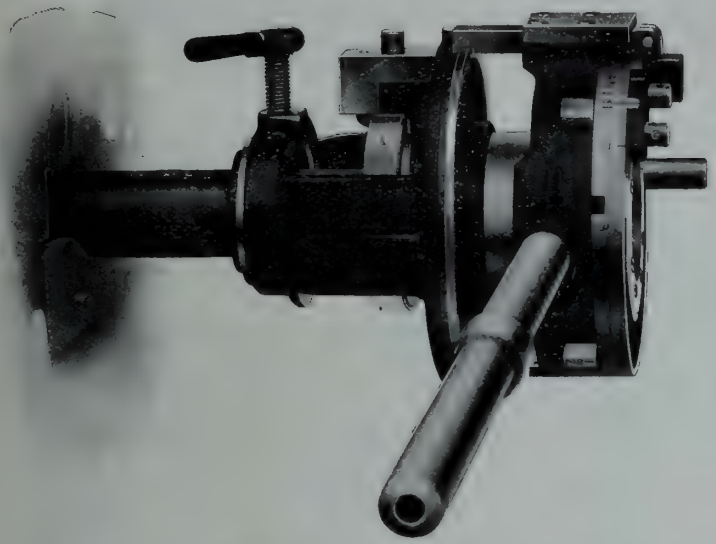

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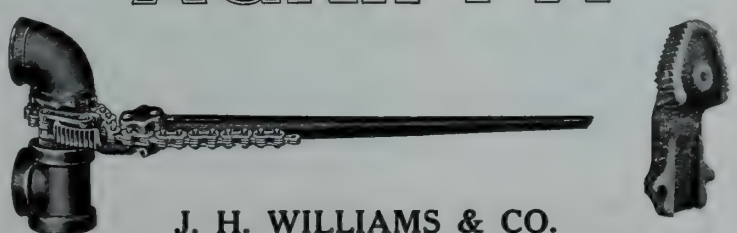

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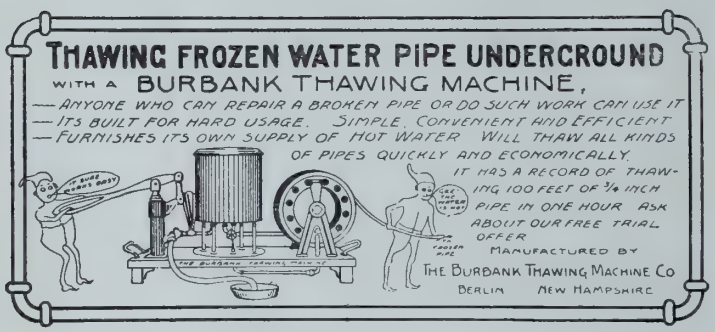
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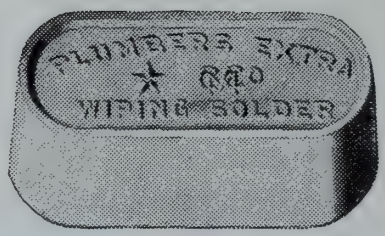

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MONTREAL, TORONTO AND WINNIPEG, JANUARY 15, 1909

BOUND FOR THE TOP.

In the nature of every civilized man there is an instinct of progressiveness—a desire to excel in some particular. It is found in some degree, in the most inefficient as well as the most energetic of men. If the opportunity for its outlet does not occur in his work it will display itself in his recreation—even in his dissipation. It appears in the ditch digger and in the accountant, in the mill operative and in the skilled mechanic. It may exhibit itself in the breeding of a few hens, the improvement of a bull terrier's progeny, or in the raising of the earliest peas or the biggest squash in a suburban lot. It may turn to the building of a motor-boat or sail-boat; to the construction of a special design in lead or iron pipe; to experimental recreations in mechanical, electrical or chemical affairs; to studies in literature or art.

Corliss, the inventor of the noted cutoff valve system for steam engines, made his experiments after working twelve hours a day as a meat-cutter. Nathaniel Hawthorne attained his splendid height in literature while working in the Custom House

Turner, one of the greatest of English painters, gained some measure of renown while earning his living as a barber

William Herschel afterward knighted for his attainments as an astronomer, built his famous instruments and astounded the scientists of the day by his discoveries while earning his living as a violinist at concerts and dances

The whole point is that, while the chance of promotion for the mechanic, the clerk, the employe of any sort, may occur at any moment and should find him ready, other chances may and frequently do occur outside of any actual advancement in his particular occupation. But it is absolutely certain that unless he is ready for them they will, in either case, mean nothing to him, nor will he often see them. If he has not a few dollars ahead the better job a hundred miles away, or the good bargain in a little real estate, or the chance to develop some bright little business idea, appeals in vain. If he has not acquired sound confidence in himself and some assertiveness of his own knowledge he will not be called upon to take charge when his chief or foreman is away sick or on vacation. If he permits his recreations to absorb his energies in matters which return him nothing—either in useful knowledge or good hard dollars—he may easily reach middle age with a reputation as a "rattling good fellow," but without the power to raise a hundred dollars for the most urgent necessity or the most promising of chances.

This getting ready and keeping ready gives a man strength, self-confidence and a cheery outlook. It easily lifts him out of the waiting class, because he feels that he is not bound to his job—that, although favor or preferment is a mighty good thing, if it comes his way, he is not dependent upon any one man or firm for his fighting chance.

WORK FOR UNEMPLOYED.

Master plumbers have an opportunity at present to perform a service to the public by urging the erection of public lavatories in every city in Canada to help provide relief work for the large numbers of men, willing but unable to find work. The work of making excavations, etc., would take care of many unskilled workers while the skilled tradesmen would also secure their share. And besides this the manufacturers, supply men and master plumbers would also benefit.

No city in Canada is in keeping with modern progress so far as public comfort stations are concerned. Toronto has done more than any other city, with its three public lavatories for men and its nearly completed public laundry and bath house. Montreal is away behind the times for a city claiming to be a metropolis, although its public squares offer innumerable opportunities for locating public conveniences. Ottawa has no public lavatory and Quebec and Halifax are, we understand, in the same class. Hamilton has one fairly good station on the public market and St. John has another small, but modern, market lavatory. London's market lavatory is unwholesome and behind the times, while Winnipeg's public lavatory on its city hall square is a disgrace to the city. Regina, Calgary and Edmonton are reaching the stage when they must supply the public needs in this respect. Vancouver has had several small corrugated iron enclosures and is replacing these with larger metal structures fitted with closets and urinals. And Victoria, though visited by thousands of tourists annually, has nothing of the nature of a public lavatory.

Even Toronto, admittedly the best supplied of any Canadian city, is far behind the needs of a growing twentieth century city and the suggestion made by the leaders of the unemployed workers of Toronto that more public lavatories be erected is a practical proposal worthy of immediate adoption. A dozen favorable locations for public comfort stations could easily be selected but the chief need is for a thoroughly modern station

on the city hall square, where it would be convenient to the down town shopping district. At present the saloons cater to the men and the departmental stores supply limited conveniences for women, but neither of these are sufficient and the city should provide conveniences to its citizens without making the individuals obligate themselves to saloon keepers or department store merchants in order to answer the calls of nature. And what is said of Toronto is equally true of every city in Canada.

If property owners in cities have rights they also have responsibilities and regardless of the claim that a city has no moral right to provide work for men who are not permanent citizens, every Canadian city has need for more modern public conveniences and the councils elected for 1909 should at once take steps to provide needed conveniences for their citizens and by so doing help to relieve the distress caused by the lack of employment forcing citizens and non citizens alike to ask for aid.

And master plumbers, who know more about public comfort stations than any other class, have a duty to perform in urging that action be taken by the various city councils without delay.

In coming issues of the Plumber and Steamfitter descriptions will be given of what has been done by various cities in Europe and America, together with plans and illustrations of various types of public comfort stations which may suggest models for construction in Canadian Cities.

NEED OF PUBLIC CONVENIENCES.

In an investigation as to the toilet facilities available to the people of the city of Chicago, John K. Allen states that it was repeatedly shown that saloons depend more upon their toilet facilities to bring them new business than they do upon their free lunch counters. The pastor of the Erie Street chapel in Chicago had his attention aroused to the necessity for the provision of these conveniences by the statement made by a teamster that for many years he had been a slave to the drink habit because his work took him long distances away from his place of employment and the saloon was the only place open to him for necessary purposes. Even in cities where private enterprise furnishes toilet conveniences to the people, many of these are not open on Sunday or holidays, with a great attendant moral danger which should not be underestimated.

An example of this danger is shown by the shameful life and hopeless death of a woman who counted as her first misstep the entering of a Chicago saloon because it offered to her the only place on a Sunday afternoon in the downtown district where she could go for such accommodation as she must have. They were too sensitive to accept these accommodations without purchasing, and there began a taste for drink which ended in a life of shame and a nameless grave in the potter's field.

The added burden laid upon hotels, office buildings, commercial establishments, railroad stations and the like, in providing toilet facilities for the general public who are not customers, rests heavily upon private shoulders. In the case of hotels, few realize how this privilege is abused. In the case of office buildings, the increased room given for such purposes is withheld from rental, the increased consumption of water is paid for at meter rates, and requires an additional mechanical equipment for its elevation and distribution; additional elevator service must be maintained, as these rooms are usually placed near the tops of buildings; and additional janitor service is required. All of these items amount to a considerable sum, more than would be required if the toilet facilities were confined to the use of tenants. In one of the railroad stations in the city of Chicago recently observed, the men's toilet room was being visited at the rate of over 7,000 persons a day and the visit was timed at a dull period. The attendant reported that during the noon hour the room was visited by at least 1,000 people each day from adjoining buildings. In a large retail store in Chicago at least 5 per cent. of the users of the ladies' toilet room are employees from adjoining competitor establishments. While it is true that this burden is cheerfully borne by private establishments, it is none the less true that it is an unfair tax upon private enterprise and should not be permitted by the public.

Most municipalities make it an offense for a policeman to visit a saloon in uniform, except in the discharge of his duty. How unreasonable it is, then, to provide no place for his necessary comforts and how demoralizing it is to the public service that this rule must be daily broken. When Theodore Roosevelt was Police Commissioner of New York City, he wrote: "One great trouble we find in trying our policemen for going into saloons in uniform is that they can now plead a legitimate excuse."

M. F. Doherty, Chicago's Superintendent of Streets, makes the statement that "The lack of and necessity for public conveniences in connection with our street cleaning forces has, for ten years or more past, increasingly forced itself upon my attention. Those employed in cleaning our streets are to an extent foreign born and too often lack that fine sense which prevents their committing nuisances in alleys and slightly out of the way corners from which bad odors soon arise. Not infrequently such places are in view of the passing public whose sensibilities are disgusted or shocked. Underground, cleanly kept closets and lavatories would tend to the physical comfort and moral well being of our large labor force."

A $2,000 bond from the plumber was one of the proposed requirements of an ordinance under consideration at Richmond, Va. The stipulation was that a bond in the sum of $2,000 would have to be given before a plumber could conduct a business in the city. It was held by some concerns that the provision would insure the best results by driving out incompetents, while no journeyman desiring to enter business would suffer any hardship, as the price of obtaining the bond is $10, and no company would hesitate to bond a reputable man. The views of the small shop man were, however, that if they lost their position they could not take small repair work on their own account. It was finally decided to strike out the bond requirement.

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Low Pressure Steam Heating Systems

What is commonly known as the one-pipe system is the most usual type of low pressure gravity steam pipe work erected to-day by the fitter.

One pipe low pressure gravity steam heating may be divided into several different styles—circuit, divided circuit, single main with dry return, single main with wet return, and the overhead style. There may be many variations in the work, but wherever there is only a single connection to the different radiators, with the water, air and steam carried through the one single connection, then it is termed a one-pipe system.

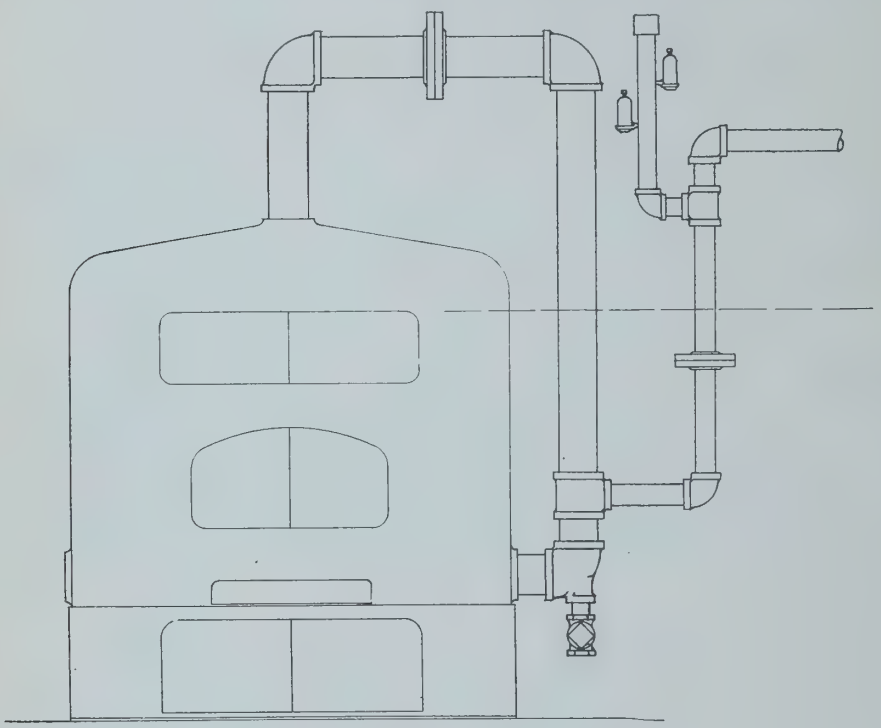


Fig. 1—Balancing Connection for Boiler.

One of the simplest forms is that where there is only required one continuous circuit main leading around near the walls of the building from the top of the boiler and back to the return inlet of the boiler,—falling with a gentle grade of 1 inch in 10 or 15 feet from the highest point directly above the boiler.

In the main the air, water and steam contained travel in one and the same direction, but in the branch arms leading to radiators the water necessarily is traveling in an opposite direction to that which the steam is traveling. It is for this reason that the branch arm should be made of a relatively larger size than would otherwise be needed. This branch arm, of course, has a pitch in an opposite direction to that of the main—that is, it should have a fairly good rise in its horizontal part or parts between the main and riser or stub.

The branch arm may be taken either off the top of the main from a T, or the T may be set at an angle of 45 degrees, connection being made from the T on the main to the branch by means of a nipple and a 45-degree cast iron elbow. Some fitters claim the latter as being the preferable way, as it empties the water more easily into the main and gives drier steam, but general experience hardly shows this to be the case. This idea arises from a misconception as to the volume of water that is condensed from the steam in any given unit of time. Under normal conditions there is only from a quarter to a third of a pound of water from the condensed steam in an hour from each square foot of heating surface.

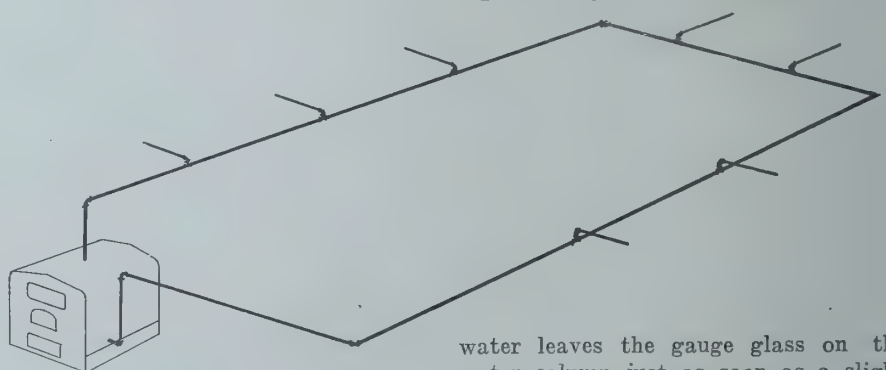


Fig #2

Volume of Water.

From this it is easy to see that the volume of water traveling in the branch is not very much of a factor as far as the pipe area it occupies.

From the mistaken idea as to the volume of water carried in the main has arisen the use of mains of excessive sizes in many cases when as good if not better service could be had with mains of much smaller size. Still at the same time care is to be exercised in not too greatly limiting the size of the main, especially if the main is of considerable length.

The ideal condition of operation with low pressure steam heating is that where just sufficient steam is evolved to maintain steam in all the radiators without the least pressure being shown on the steam gauge. Where the boiler is of ample capacity, the draft good, and the piping reasonably well erected it is just as easy, and in fact easier, to maintain this condition than to operate the fire so that at one time there are three or four pounds of pressure showing on the gauge and at other times not sufficient steam to supply all the radiators.

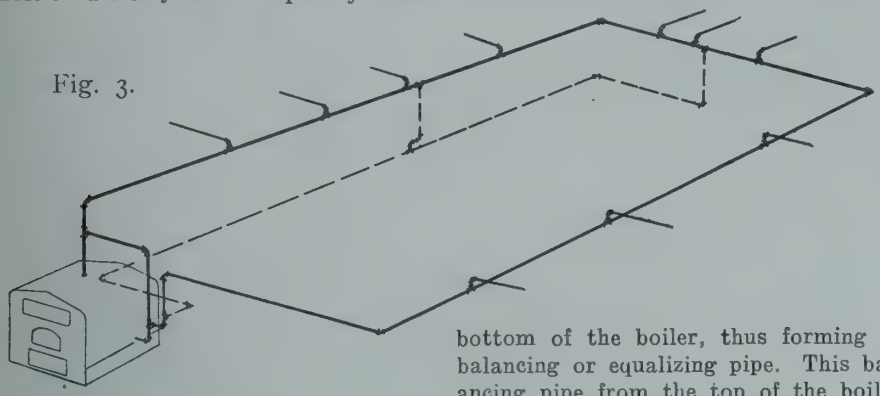
Water Leaving Gauge Glass.

Occasionally with low pressure steam heating one meets with a most perplexing difficulty and that is where the water leaves the gauge glass on the water column just as soon as a slight pressure is raised at the boiler. This may happen with as low as only a half pound of indicated pressure, or may not take place until there is one and a half or two pounds indicated pressure. In rare cases it may happen before the needle on the steam gauge has hardly left the pin or stop.

This phenomenon is due to the difference in pressure between the two ends

of this system, together with the formation of a vacuum under certain conditions, and also by entrained water carried over with the steam into the steam main, due to the velocity of the steam as it leaves the boiler. This condition arises just as frequently with

Fig. 3.



tubular boilers as with the usual type of cast iron sectional boilers now principally used to the exclusion of the former for low pressure steam heating.

Overcoming this difficulty and preventing it from occurring is not such a difficult task as it is some times looked upon as being particularly where the cast iron type of boiler is used, as these boilers are usually provided with more openings for the flow and return than are required for the mains for an average one-pipe steam system.

With many the idea has obtained that the water leaves through the return, or backs up in the return, and this is a very natural conclusion. This, however, is seldom the case, the water leaving through the steam main. From this idea comes, to a large extent, the use of check valves on the returns of low pressure steam heating systems. Check valves are likely to form an accumulation of sediment and other causes to become inoperative and require a certain head of water to operate them under any condition.

In several instances where the water has left the gauge glass on the water column of the boiler the writer has had the opportunity of observing that the water was leaving directly through the steam main and not back out at the return of the boiler. This occurrence has been noted both where check valves were in use and where there were no check valves. In fact, the same systems have been tried both with and without check valves with no appreciable difference in the maintainence of the water line.

This difficulty can easily be prevented by making the uptake pipe of the flow of the full size of the opening in the boiler, and using a reducing elbow tee as the circumstances may require for the connection to the main.

Automatic Air Valves.

Place two or more reliable automatic air valves at a point just below where the main drops down to the return. Connect one of the openings on the top of boiler with a return opening at the bottom of the boiler, thus forming a balancing or equalizing pipe. This balancing pipe from the top of the boiler to a point below the water line should be of the full size of the opening in top of boiler, and it may be reduced in size below this point if desired.

Such an arrangement of the pipes is shown in Fig. 1. This balancing pipe may be taken as shown from an independent opening in the top of the boiler, or it may be taken out of the side of the uptake pipe connecting to the main, or it may be connected to the main on its underneath side as may be desired. In the latter case the main should be of the full size of the opening in the top of the boiler to a point beyond the connection of this balancing or equalizing pipe.

In connection with this equalizing or balancing pipe some fitters deem it advisable to connect two or more openings into the one main, making these connections of the full size of the tappings in the top of the boiler, but sometimes these connections are difficult to make and will generally be found unnecessary.

Systems Illustrated.

Fig. 2 shows an overhead basement circuit main for a one-pipe low pressure gravity steam heating system. It is with this type where there are no bleeders or drips used that the trouble spoken of is the most likely to occur, particularly if the main is excessively long and has not got a considerable elevation above the top of the boiler. In a system of this kind it is the best practice to make little or no reduction in the pipe size until after the main has reached the water line of the boiler. Reducing pipe sizes in the main is very likely to cause pockets where the water will lodge and prevent the proper return of the water to the boiler and decrease the effect area of the main for the carrying of the steam.

Fig. 3 shows this same system with the balancing or equalizing connection

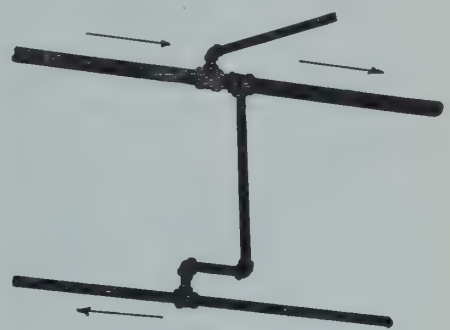


FIG. 5.

which has been shown in detail in Fig. 1.

Fig. 4 shows a part of a circuit main; the heavy lines indicating a main that is carried practically entirely overhead, forming a dry return, and the dotted line indicating how this part of the main which forms the return may be dropped down forming a wet return. In the former case the main should be carried very nearly its full size to a point near the boiler where it connects to the drop pipe forming the return as here the pipe carries both steam, air and water, but in the latter case, at a point below the water line of the boiler the pipe may be considerably decreased in size, as its only function is to carry the water back to the boiler.

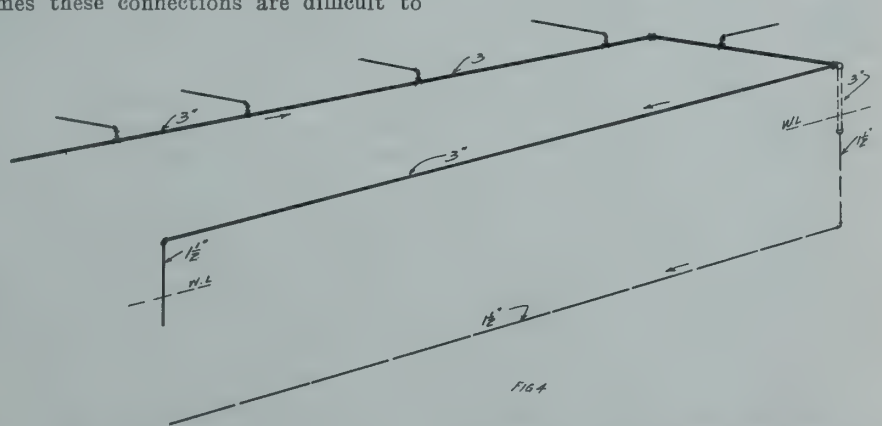


FIG 4

Fig. 5 shows a drip or bleeder connection from a steam main to the return, which it is frequently desirable to make use of, particularly at a point

beyond where there is a considerable quantity of radiation attached to the main. By means of this connection, which is taken out of the bottom of the main it is relieved of all the water from the steam through the various radiators attached to the main before reaching this point, thus leaving the balance of the main free to carry its steam. Such a connection is always

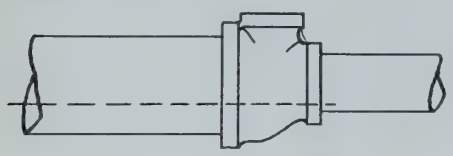


FIG #6.

made also where it may become necessary to step a main up through some peculiarity of the building construction, or to keep the main sufficiently above the water line of the boiler. This connection need rarely be larger than 1 inch, or 1¼ inch pipe, as its sole function is to carry away and deliver back to the boiler the water of condensation.

Fig. 6 shows how reducing fittings in horizontal mains can interfere with the working of a low pressure one-pipe steam system. Even with the usual grade of the piping a pocket for the lodgement of water is formed here, that reducing the steam carrying capacity of

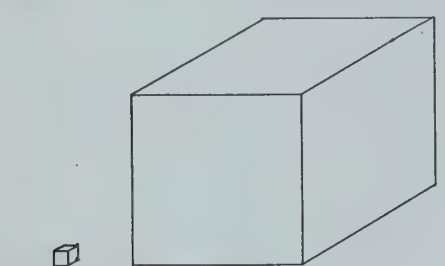


FIG #7.

the main and does not permit of the effective use of the calculated sizes of mains, and is not conducive to the delivery of the driest steam.

Fig. 7 indicates the relation between steam and water. That is, one pound of water converted into steam occupies approximately 1,700 times as much space, or in other words, a cubic inch of water makes a cubic foot of steam. From this it is to be seen how little of the pipe area is actually required for the water of condensation when the water is free to flow to and through its return to the boiler.

Ahearn & Soper, Ottawa, will enlarge its plant by the erection of a big office building next summer.

Underground Insulation of Steam and Hot Water Pipes

Address by Harry Gillett, Before a Convention of Steam Engineers at Toledo, Ohio, Recently.

In recent years the matter of the insulation of pipes laid underground has received wide attention on the part of engineers, and, as a result, forms of insulation have been devised to meet satisfactorily almost every requirement. Some of these methods are described in a paper by Harry Gillett, read before the Ohio Society of Mechanical, Electrical and Steam Engineers, at their meeting just held, Nov. 20 and 21, at Toledo, O. After drawing attention to the fact that nature presents some of the most interesting examples of insulation, he continues:

Why do we insulate underground steam and hot water pipes? In order that we may carry our steam or not water the required distance with the least possible loss of heat or power. The insulation of such pipes can only be obtained by confining that pipe within a covering which contains dead, dry air split up into small particles by the use of some non-conducting, indestructible materials, felted or massed together.

Obstacles to Overcome.

Underground insulation of such pipes is difficult, for two reasons: First, on account of the dampness getting into the covering (water being a good conductor of heat), which cannot be readily driven off, the pipes being confined by the earth; and, secondly, that the coverings themselves are liable to be attacked by destroying influences found in the earth itself. These, combined with the heat of the pipe inside and dampness on the outside of the covering, means certain death sooner or later to anything of an organic nature. Consequently the future insulation of these pipes must of necessity be confined to methods and materials which will positively safeguard the pipes against such influences as above mentioned, and, so far as present knowledge permits, this seems to be either the tunnel or some form of conduit composed entirely of inorganic substances. We will consider these two types.

Tunnel Insulation.

No one will dispute the statement that a tunnel is a pretty substantial proposition, and in a good many ways it has advantages which are worth consideration. The pipes are always accessible, and if a leak occurs there is not much trouble in locating it, so that repairs can be made without much difficulty. New pipes can be added from time to time as occasion requires, the tunnel being erected in a permanent manner and of size sufficient to accommodate additions. On the other hand, the first cost is very high, the excavation being relatively much larger than would ordinarily be required for the number of pipes contained. The pipes must be separately insulated, and as it is never thought necessary to cover the flanges under such conditions, the loss of heat from the pipes is sufficient at all times to comfortably heat a space as a rule approximating about the same number of cubic feet as are contained in one-quarter of the buildings which are to be heated. The argument is sometimes advanced that once this space is heated the loss is very slight, and to some extent this is true, but not by any means entirely so.

Conduit Insulation.

The other system is that using "vitrified sectional conduit." All the materials are absolutely inorganic, the shell being composed of a carefully selected and thoroughly ground and mixed combination of stoneware clay. After the material passes from the molds it is properly treated before being placed in the kiln, to avoid warping of the sections, this being extremely important. The conduit is scored in process of manufacture so that it can be readily split, which is done before shipping, each half being so marked that it can be identified on arrival, in order that the original tops and bottoms may come together. Before splitting, each conduit length must sustain a transverse test between hardwood supports which cover one-third of the entire circumference of the conduit.

The fitting or insulating material is composed of asbestos fiber and sponge, which is so intermixed that a maximum number of confined air-cells are obtained.

The pipes are carried on roll frames embedded in concrete, special tees being provided for this purpose, and whenever it is found necessary to anchor or turn a corner, brick pits are built. Almost any number of pipes may be placed in a single conduit, and it is purposed that no pipe shall have less than 3 in. of the insulating material around it. The pipes are perfectly insulated, and the entire conduit, with its contents, is self-contained. The loss in pressure is practically only that caused by the fric-

tion between the steam or hot water and the interior surface of the pipes.

This conduit can be laid within 6 in. of the top of the ground, snow not melting directly over it, as long as the atmosphere is below freezing point, according to actual observation.

Problem of Instalation.

The question of instalation is a vital one with this, as well as with all other mechanical devices, especially so as it is of the greatest importance that no leakage of water shall occur. The lower half sections and the roll frames must be in perfect alignment, and it is absolutely necessary that the pipes shall be tested with a cold-water test of at least 50 per cent. in excess of the steam pressure to be carried before the top half sections are placed or any insulating material put on; neither should caulking or rusting of joints be allowed. The job of steam fitting must be perfect, and experience teaches that by following this course it will remain perfect.

Observation tees are provided in case it is necessary at any time to look for a leak, but after a long term of years, during which time many thousands of feet of the conduit have been placed under ground throughout the Eastern States, it was proven that no observation is necessary, and the reason is simple. In the first place, the necessity for careful and proper instalation has been duly recognized and taken care of; there is no chance of anything attacking the pipe from the outside, and with this danger eliminated the chances for necessity of renewal are very slight. In case, however, it does become necessary, after a long term of years, the defective pipe is easily located and the trouble and expense of renewal quite small.

On the other hand, the results to be obtained are almost marvellous. One case in mind, at Andover, Mass., where a line 600 ft. long was tested and the gauge at both ends showed exactly the same pressure, and other cases could be mentioned where approximately the same results have been obtained; in fact, no case was ever reported where, with proper instalation, the efficiency test showed less than 90 per cent.

Insulating Material.

Various substances have been tried out, but most of them deteriorate so easily, so that, financially, nothing was found to equal, as an efficient insulating material, water and heat proof substances which could be molded into convenient shapes and be made to entrap a lot of air, for still and stagnant air is the very best kind of an insulator.

After many laboratory tests have been made on a large variety of substances, asbestos was found to fill the requirement best. It can be worked up easily into any shape, dense or loose in construction, and is not easily damaged by vibration of pipe, etc.

An idea as to the amount of energy lost due to condensation of steam in pipes may be derived from the statement that 6 ft. of 6-in. pipe uncovered will cause a loss of energy each hour equivalent to that generated by 1 lb. of coal under average conditions. A good covering reduces this loss at least 80 per cent.

THE PLUMBER AND HIS PROFIT.

For the sake of argument admit that plumbers' bills are heavy, how many wealthy plumbers do you know?" remarked a Toronto business man the other day to Plumber and Steamfitter. "You read of many merchants, doctors, lawyers and manufacturers taking their iamilies to the seaside and to Europe for outings, but did you ever hear of a plumber and his wife spending their summer vacation abroad. The most maligned and traduced tradesman in the world is the plumber, and he probably makes less money on the year's operation of his business than any other class of men in the community and I know whereof I am speaking. At the investigation into the plumbers' combine held in this city a few years ago some persons held up their hands in horror and thought the members of the trade were robbers because they made twenty-five per cent profit on certain lines. I want to tell you, although I am not engaged in the business, it is on very few lines that this margin is made. The plumber has to run the risk of loss in many ways that do not effect any other business. Yet, there are mean men, mostly small minded contractors or one-horse builders, who will go to a plumber and ask him to do a job or furnish them goods at an advance of five or ten per cent. because they are buying for another, or are not the direct consumer so to speak. Now and then a plumber will be found weak enough to accede to their propositions. It requires at least twenty-five per cent. profit on all that he does in the way of jobs or selling supplies for him to live and keep his family and, after deducting all losses of time and material, he has very little if anything left to put in the bank."

"Let me illustrate what I mean. A plumber is putting in a water closet. In screwing the bowl down to the floor so that it will stand the smoke test, the nuts on the bolts are tightened a little too firm or there is a slight defect in the make and the flange breaks or cracks because of the extra tension on one side. The result is a complete loss and there is $6 to $15 gone, for the plumber is the only one who has to suffer and the goods are not like other kinds which can be repaired if something goes wrong. Or, perhaps, a plumber is putting in a marble lavatory. A helper is ascending the stairs with it and slips. The result is that the slab is cracked and there is $8 or $10 all gone to smash. Two of his men are carrying up a porcelain bath and it is chipped by knocking against some projection; or they are trying to put in place an enamel tub and, if a piece is knocked off owing to one of the employes carelessness, or by accident, the result is another $20 or $25 gone to the bad. I might go on and cite other cases where a mishap results in a complete loss. Who has to stand it all? not the builder, the owner of the house or the contractor; the plumber and no one else.

"Again a plumber figures on many jobs and perhaps lands a contract for heating or plumbing once out of every five or six tenders. He has to go to the architect's office when invited to put in a bid for the work, spend from half a day to a day in copying the plans and then sit up late at night or else take the time from other work in the shop in figuring the exact length of lead pipe required, the number of joints, taps, cocks, soil pipe, solder, etc. This has to be all calculated to a nicety and the closest figuring done, not only on quantities but in estimating. There can be no guess work. The man, after doing all this perhaps does not get one profitable tender in six; I mean a job of sufficient size on which to make any profit. Who is going to reimburse the plumber for all the time he has lost in copying plans, figuring, estimating and tendering. He has probably taken a couple of days or a week to do this work and then finds that he has not landed a single contract. The plumber has to suffer not only the loss of the job but of the time as well. The builder does not pay for it or the architect or the contractor. The plumber has to bear the loss himself. The next time you hear that plumbers make enormous profits and should get rich at the alleged high prices they charge for work, just you tell the man who makes this complaint that he does not know anything about the business, the disappointments and direct losses month in and month out that members of the trade have to put up with and of which the public is entirely ignorant, and I have indicated only a few of them."

The Sanderson-Harold refrigerator factory, burned at Paris on Christmas Day, will be rebuilt on a larger scale at that place.

Preliminary Treatment of Sewage

Extracts From the Recent Report of the Royal Commission Appointed by the British Government on Methods of Treating and Disposing of Sewage.

(Continued from Dec. 15th issue.)

Should Tanks Be Used in Series?

It would usually be more advantageous to use continuous flow sedimentation tanks in parallel than in series, for the following reasons: With tanks of ordinary dimensions, the minimum rate of flow is obtained where the tanks are used in parallel. As a rule, after a certain percentage of the suspended solids has settled out of a sewage, little further advantage is gained by continuing the same tank treatment, the suspended solids remaining in the supernatant liquid being of low specific gravity, and depositing very slowly unless quiescent settlement is given. In practice, therefore, so soon as this maximum quantity of solids is settled out as a result of continuous flow settlement, little advantage is obtained by passing the liquid through another tank at a similar rate.

If sedimentation tanks are used in series, there is a natural tendency to allow the last tank in the series to run too long without being cleaned out. The result in such a case is that the sludge, lying at the bottom of this tank, even though small in amount, begins to ferment with the formation of gas bubbles, which carry suspended matter up into the liquid.

There is rather more difficulty in cleaning tanks which are used in series than those used in parallel, owing to the fact that the first tank in a series is usually found to contain very thick sludge, which may, in some cases, have to be mixed with sewage before it can be got to flow into the sludge main; while in the last tank the sludge is very thin and watery. At a large works, however, where there are special facilities for removing and dealing with dense sludge, such as would accumulate in the first tank, this difficulty would not be serious.

Our experience with continuous flow settlement tanks used in series has been obtained chiefly at Halton, and, with continuous flow settlement tanks used in parallel, at Oswestry and Shipley. As the same arguments apply to the settlement of precipitated sewage, however, we may also adduce the results of our observations at Kingston, Maidstone and Hendon, for the use of tanks in series, and at Horfield, for the use of tanks in parallel.

It is desirable to use quiescent settlement tanks in parallel, in order that the period of actual quiescent settlement (i.e., apart from filling or drawing off) should be as long as possible.

Liability to Nuisance.

Settlement of sewage by sedimentation does not give rise to serious smell during the time the tanks are actually at work. When the tanks are sludged, there is considerable smell, and since tanks used for quiescent settlement have to be sludged more often than those in which there is a continuous flow, there is more liability to recurring nuisance in the former case. In the case of tanks used for settling domestic sewage, there is only slight local smell during the process of settlement. We have had practically no experience of the sedimentation of sewage containing brewery or tannery refuse in quantity, but in such cases the smell would, no doubt, be markedly increased.

The notion that the solid matter of sewage would be digested by passing the sewage through a sealed tank is by no means novel, but it does not appear to have had any extensive practical application until Mr. Cameron, City Surveyor of Exeter, proposed the adoption of the "septic tank treatment" for that city.

At that time it was claimed that the septic tank possessed the following, among other, advantages :—

That it solved the sludge difficulty, inasmuch as practically all the organic solid matter was digested in the tank.

That it destroyed any pathogenic organisms which there might be in the sewage.

That sewage which had passed through a septic tank was more easily oxidized than sewage from which the solids had been allowed to settle, either with or without the aid of chemicals, in tanks which were frequently cleaned out.

As regards the first of these claims, it is now clearly established that, in practice, all the organic solids are not digested by septic tanks, and that the actual amount of digestion varies to some extent with the character of the sewage, the size of the tanks relative to the volume treated, and the frequency of cleansing.

At Huddersfield, Mr. Campbell estimated that about 38 per cent. of the solids were converted into gas or digested; at Leeds, Mr. Harrison put the figure at about 30 per cent.; at Manchester, Dr. Fowler says that possibly, though not certainly, about 25 per cent. of the total suspended matter is digested or converted into gas; at Sheffield, Mr. Haworth puts the digestion at 32.9 per cent., while at Birmingham, Watson and O'Shaughnessy say that the figures available indicated a digestion of not more than 10 per cent. of the suspended matter entering the tanks.

From careful observations, extending over two years, which we made at Exeter and Ilford, we found that, without allowing a correction for colloidal matters, the digestion at Exeter was about 25 per cent., and at Ilford about 30 per cent.

The sewages of both places were domestic in character: the Ilford sewage was of average strength; and the Exeter sewage about two-thirds as strong. In each case the tank was sufficient to enable it to hold a day's flow, and no sludge was removed from either tank during the experiment.

As regards the second claim, we find as a result of a very large number of observations that the sewage issuing from septic tanks is, bacteriologically, almost as impure as the sewage entering the tanks. And as to the third claim, the evidence which we received was conflicting. Some witnesses stated that septic tank liquor was more easily treated than sewage from which the solids had been settled, either with or without the aid of a precipitant, while others expressed a contrary view. The point is one of great importance in the purification of sewage, and we therefore thought it desirable to investigate it somewhat exactly. After visiting several places, the Dorking sewage was selected as a suitable domestic sewage with which to experiment. For the purpose of which three identical percolating filters were constructed. One was fed with settled sewage, one with sewage which had been subjected to chemical precipitation, and one with septic tank liquor.

The experiment, which was under the supervision of Eric H. Richards, and was carried on for over a year, conclusively proved that in the case of an ordinary domestic sewage septic tank liquor is not more easily oxidized on its passage through filters than the

other liquids. The results of careful experiments previously carried out at Rochdale by Mr. Platt, at Leeds by Mr. Harrison, at Huddersfield by Mr. Campbell, and at Sheffield by Messrs. Wike and Haworth, at all of which places the sewage contains trade effluents from manufacturing processes, agree with our Dorking results.

It must, therefore, be said that some of the more important claims which were originally advanced in favor of septic tank treatment have not stood the test of experience. At the same time, we think that in certain circumstances the adoption of this method of treatment, as a preliminary process, is efficient and economical.

Suspended Solids From Septic Tanks.

The settlement of the suspended solids in septic tanks is not usually very thorough, and the evidence shows that at many places the liquor issuing from the tanks contains on the average from 15 to 20 parts of suspended solids per 100,000.

It is generally impracticable to maintain the amount of suspended solids issuing from a septic tank at an approximately uniform level for any length of time; and the amount has a tendency to increase seriously as time goes on. For example, at Burnley it was found that that the suspended matter varied from 15 parts per 100,000, after a few weeks' working, to 35 parts per 100,000 at the end of six months; at Huddersfield the amounts were 8.6 parts per 100,000 at the commencement and 23.3 parts per 100,000 at the end of eleven months; at Leeds, from January to June, 1903, starting with a perfectly clean tank, the suspended solids averaged 12.2 parts per 100,000, and from July to December, 1904, the average was 24.1. The variation in the amount of the suspended solids in the tank liquor increases the difficulty of maintaining the effluent from the filters at a constant level of purity, and the amount of tank liquor which can be properly dealt with on the filters tends to decrease as the amount of the suspended solids in the tank liquor increases.

Cleansing of Septic Tanks.

There is no doubt that the longer a tank is run without cleaning, the less volume of sludge there will be per million gallons of sewage treated. Digestion, of course, plays some part in this, but only a small part compared with the settling together of the finely divided septic sludge lying at the bottom of the tank. The sludge from a septic tank which is cleaned out at short intervals of time may contain something like 90 to 95 per cent. of water, while, if the tank is allowed to run for, say, two years, the water in the sludge may be only 80 to 85 per cent., or even less. It is obvious that this makes a great difference in the volume of the sludge to be dealt with, provided that it can be removed from the tank in the semi-solid form and without having to be mixed with sewage or water to make it run through the valves.

There is also evidence to show that sludge which has remained in a tank for a long period, say, a year or more, is in some cases less offensive than sludge which has been there for only two or three months. At Birmingham, Leeds, Exeter, and other places this was found to be the case, though, on the other hand, at Guildford, where there is a considerable amount of brewery waste in the sewage, the septic sludge had a very offensive smell when removed from a tank which had been in operation for a period of twelve months.

From the point of view of sludge disposal alone, it would be generally advisable to allow septic tanks to run for considerable periods of time before cleaning out, either wholly or partially. There are, however, two other important considerations to be taken into account. The amount of suspended matter issuing in the tank liquor, which greatly increases as time goes on, and the fact that at a large sewage works it would usually be less easy to deal with very large quantities of sludge at long intervals of time than with smaller quantities at short intervals.

How Long to Run.

Constant conditions as regards the amount of suspended solids in the liquor issuing from the tank should be aimed at, and from this point of view frequent partial removal of the solids would usually be desirable; but our experience points to the conclusion that there can be no definite rules as to how long a septic tank should be run without cleaning, and that it must be left to the manager of each works to see that the suspended solids issuing from the tank do not increase to such an extent as to have an injurious effect upon the filters or upon the quality of the filtrate. The point at which injury to the filters or deterioration of the filtrate will occur will largely depend upon the nature and strength of the sewage, the kind of filter used, the size of the material in the filter, and the rate of filtration. At Accrington, for instance, something like fifteen parts of suspended matter in the septic tank liquor can be put upon the coarse percolating filters, without any danger of clogging, whereas at Manchester and Burnley, this would be too much for the contact beds.

Again, the successful working of some forms of fine percolating filter (e.g., that at Fern Barnet), depends upon the time allowed for the drying of the sludge on the surface of the materia, between two applications of tank liquor. A tank liquor containing, say, 10 parts of suspended matter per 100,000, might be conveniently treated on a filter of this kind, if the delivery were made once every three days; but if it were made once every day, the sludge caught on the surface of the filter would probably not have dried sufficiently to allow of its being scraped off before the next delivery was made.

Although the point is not one in regard to which any general rules of a precise character can be laid down, we are inclined to think that in the case of small sewage works, constructed to serve populations of, say, 100 to 10,000, it would be best that septic tanks should be allowed to run, without being cleaned out, so long as the suspended matter in the tank liquor showed no signs of affecting the filters detrimentally, provided that the tanks were never allowed to become more than one-third full of sludge.

In the case of a sewage works constructed to serve populations from 10,000 upwards, we think it would probably be advisable partially to clean out septic tanks at short intervals of time, care being taken as far as possible to remove only the best digested portion of the sludge.

Removing the Sludge.

With regard to the question whether it is advisable entirely to remove the sludge from septic tanks when these are cleaned out, the evidence and our own observations seem to show that this is not advisable. Experiments at Leeds, Rochdale and Dorking have shown that the changes which sewage liquor undergoes in a septic tank are of minor importance as regards subsequent filtration, but the following considerations must be borne in mind:—

In a septic tank which is to be cleaned out there is always a considerable amount of sludge which has had little time to undergo digestion. If possible, therefore, this part of the sludge should be left in the tank.

One of the main uses of a septic tank is that it has the effect of equalizing the sewage as regards strength, and of keeping the character of the liquor uniform.

(To be Continued.)

Size of Soil Pipes for Dwelling Houses

W. E. Partridge, in the Metal Worker, Contends That it is Impossible to Select a Uniform size to Meet the Varying Conditions in Different Districts.

The problem of finding the proper size for the soil pipe in the private dwelling is difficult because it is one which involves a number of unknown quantities. It is for this reason that the solution of the problem is not general and definite. There is not one answer which will apply to all cases and in all circumstances. Among these unknown quantities which have such an important influence upon the size of the pipe, we have, first, the character of the pipe itself. It may be of cast iron, with short bends and offsets, or it may have long easy bends. In addition to this there is another element in the character of the fitting, workmanship having a very considerable influence. Lead and brass are again factors, and with them the answer would vary. There would be, undoubtedly, a difference between wrought and cast iron pipes and fittings. The water supply, or the quantity used for a flush, the kind of usage to which the fixtures are subjected and the kind of ventilation are all features which have to be considered and, perhaps, most important are the habits of the family as to the use of toilet paper or newspaper. With so many variable conditions the fixing of a right size of soil pipe which will answer for a two or three storey dwelling in every part of the country is out of the question. What would work perfectly under one set of conditions is out of the question under others.

The discussion of this subject develops the fact that there is everywhere a considerable respect shown the rules and regulations established by the New York Board of Health. Great weight is given to the precedents which they have made by their practice. This was very natural and quite proper, but because certain things are found necessary in New York is no reason why the same things are necessary in every corner of the United States and Canada.

The rules of the New York Board of Health were made to insure safe plumbing work under all the varying conditions found in the city. The circumstances under which they were made were most peculiar. Plumbing was by no means universal. The privy vault was common and on the East Side it was the favorite method of fitting out the tenement house. Into these vaults the public was accustomed to put everything and anything which it was desired to dispose of. This was a general habit and plumbing work suffered accordingly, the closet being looked upon as an improved privy. When the New York rules were put into their present shape plumbing in the city was in a condition that can hardly be credited to-day. Hence, the task before the board was one of peculiar difficulty.

New York Regulations.

Starting with the idea that the rules must be so framed as to insure safe work which should not be liable to stoppage or derangement under ordinary conditions, the New York Board of Health was the first to make an intelligent attack on the old style of work and to introduce new and improved materials and methods of construction. One of the first difficulties met in enforcing the regulations where improved fittings were ordered, was the statement which was constantly made by the plumbers, "Such things are not made."

The rules were largely the results of the "cut and try" method of procedure. Things were permitted to be done until a sufficient number of failures had occurred to make it evident that a change was necessary. Then a rule was made to prevent further failures.

At that time little or nothing was absolutely known in regard to the behavior of waste matter in soil pipes. The flow of water was a matter of conjecture, and the investigations undertaken to determine various points were long and expensive. Yet the rules established under such circumstances have been looked upon by boards of health in outside cities as having great authority. If the basis is examined upon which the dimensions of the soil pipe were established and the reasons which influenced the board in prescribing the minimum size, better ability will be found to draw just conclusions as to what is proper for the private dwelling houses outside of New York City.

Closets Used as Garbage Dump.

At the time of which I speak the pan closet and the plain hopper with the privy were in almost universal use. They were practically all that were commonly found. The ignorance in regard to the use of plumbing fixtures was simply unbelievable. The common use of the privy vault seemed to impress the public that closets were only modified forms of the vault. Consequently they were made the receptacles of every form of rubbish and garbage. Cases of stoppage of pipes and closets seemed to be a daily occurrence. Plumbers and inspectors of those days found everything in the containers from hair brushes, boots and shoes, to gold watches and articles of clothing. The public idea was that anything that could be forced through the outlet was legitimately out of the way. The numberless forms of rubbish which accumulate in a private house went into the closet as into a privy vault without a second thought. With this general public ignorance it was natural for those making the rules to select for the minimum size of soil pipe that which the records showed was practically free from stoppage. So it came to be that the 4-in. was chosen as the least permissible size. It was found that such a diameter was sufficient to carry off anything that could be put through the closet outlet. It must be understood that the carelessness and ignorance in regard to the proper method of treating plumbing work was not by any means as great in dwellings as in the tenement houses, but it was sufficiently so to make great precautions necessary.

During the time when the first rules were being made there was a constant fight on the part of the plumbers against the department, and every possible advantage was taken of the rules and regulations to secure cheaper construction. If distinctions were made between different classes of buildings, or buildings of various sizes, or having a varying number of fixtures, every kind of advantage was taken of the inspector to secure the use of the smallest size and often the most unsuitable piping. More trouble was therefore saved by selecting as the minimum size, one which experience showed had given the least trouble. This was another reason for making 4 in. the smallest diameter.

Circumstances Govern Size of Pipe.

There was also a mechanical reason for making the soil pipe larger than was actually necessary for carrying away the contents of the closet. The S-trap was in common use, and a line of these traps on a 2-in. or 3-in. soil pipe were easily siphoned and left without seals even when ventilated. The nonsiphoning traps of later days had not then made their appearance. The old bottle and drum traps had been prohibited because of the uniformly foul condition. Dark closets were common, and the use of newspaper was so prevalent that in a pipe of small dimensions a practically solid piston was formed, and the short turns, offsets, and T-Ys, which were then in common use, made the small diameters impracticable. The common use of toilet paper at the present time, of course, entirely removes one source of stoppage which was then a serious matter. Where the 4-in. pipe would carry clothes, aprons, old towels, slippers

and similar articles out to the house trap, a 3-in. pipe might have been so completely clogged as to make its bodily removal necessary.

It will be seen that the decisions of the health department in regard to the size of pipes were the result, not merely of mechanical needs, but are to a considerable extent dependent upon the use which was habitually made of similar conveniences by the people. While the establishment of the 4-in. pipe as a minimum could not have been safely avoided in New York, yet it by no means follows that New York practice is best or suitable for other parts of the country. In New York, it was found absolutely necessary to make the plumbing system fool proof.

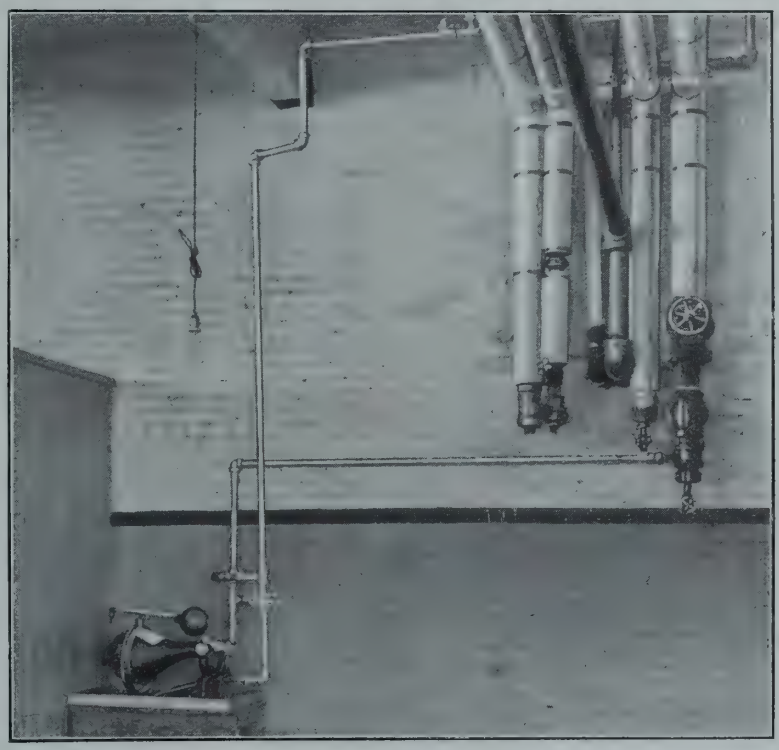
In the modern private house where people are sufficiently intelligent to use the closet only in a legitimate manner, and to see that rubbish is disposed of properly, the question takes on an entirely different aspect, and one important factor is entirely eliminated. With two or three closets on a line and all turns and offsets made with large radius fittings, and where nonsiphoning traps are put under the smaller fixtures, a 3-in. soil pipe is as safe as any other. The difference in size between a 2½-in. outlet and the 3-in. soil pipe is amply sufficient for the necessary expansion of material. Although the fecal matter may take the character of a plug, yet with nonsiphoning traps or traps ventilated so as to prevent their seals from being blown out, the 3-in. pipe proves itself of ample size. With a lead soil pipe and proper workmanship, a 2-in. pipe would undoubtedly work well, provided that the flush of each closet was ample. It must not be forgotten that the number of gallons in a flush is an important element in determining the size of the soil pipe.

There is no occasion for towns and cities away from New York to make New York rules and regulations standard. While it is possible that the rules for this city have been formed on a practical rather than a scientific basis, it is no reason why they should be suitable for a town having a small population.

LAUNDRY TRAP INSTALATION.

By A. E. D.

The new laundry of the Standard Shirt Company, Montreal, was well under way and the concrete floor almost completed when it was discovered that a tunnel for steam and water pipes under the floor had been overlooked. To tear up the concrete to make the tunnel would have been very expensive on account of the length of the building, 325 feet, so it was suggested that the pipes be all run over head. This was thought to be hardly feasible on account of the trapped water having to be lifted from each set of machines at the floor to the pipe over head. A test of a small Bundy trap was made and this trap lifted the condensed water 60 feet vertically. A test was also made to determine the efficiency of one of these traps on the drying room pipes. The result was that the linen could be put through the dry rooms fifteen minutes faster than before, showing that there was less water of condensation lying in the steam pipes and, therefore, less heat absorbed by that water.



A Trap Instalation Showing Pipe Arrangement.

The steam enters the building through a 4-inch pipe, 175 ft. from the boilers; inside the building the size changes to 3 in., and the first trap of the system is placed near the floor at this point, returning the condensed steam up again to the return pipe, which is on the same level and hanger as the steam. The steam for each ironing machine, washer, dryer, etc., is taken from the top of the steampipe, and there is a trap to each set of machines. These traps are all situated on the floor and the interesting point is that they actually pump the water against the distance between the floor and the overhead return pipe. There is a pressure of 85 pounds at the boilers and a steam gauge placed in the steam line about half way of the building from the steam entrance showed a loss of about one pound. This is remarkable in itself and speaks volumes for the rapidity with which the pipes are emptied of water keeping the steam dry and the pressure up.

From an engineering point of view this is nearly an ideal instalation. There are no hidden nor closed in pipes or valves, everything is right at hand and a leak or defect can be instantly noted.

ST. JOHN WATERWORKS.

The water and sewerage department of St. John, N.B., has construction work now in progress for a larger and more effective water supply, which will require additional water supply pipes. Much has been done to improve the water supply by enlarging and improving the whole system. The old wooden pipes have to a great extent been removed and replaced by supply pipes imported from England.

St. John, during last year, spent about $50,000 on construction of new mains, and about the same amount for material and labor, in the maintenance of its water system. It is not a large city, and its population has been practically stationary for a generation past. Thus little building is going on and public improvements are not extensive, but there was an imperative need for improving its waterworks system, which had become so inadequate that there was danger of a repetition of the great conflagration which practically wiped out the city in 1877. Thus the work was undertaken section by section and is still going on, and it must be some time before the city will be in possession of a modern, up-to-date waterworks system.

Proper Method of Estimating Jobs

W. J. Gilchrist, in the Plumbers' Trade Journal.

A large listing house engaged in compiling and selling lists of names of different trades people to manufacturers, wholesalers and others in search of prospective customers, have and sell three separate lists of plumbers' names and addresses. List No. 1 contains the names of between eighteen thousand and nineteen thousand legalized operating plumbers throughout the United States. List No. 2 is more select and contains the names of a little over eight thousand who are rated and responsible.

The third is still shorter, containing the names of only two hundred and ninety-nine quoted "wealthy." All they would call "wealthy" among nineteen thousand. This condition exists in a trade doing a large and increasing volume of business, requiring a high degree of technical skill, protected in the selling of its goods, protected in the mechanical department by boards of health, water departments, street departments,

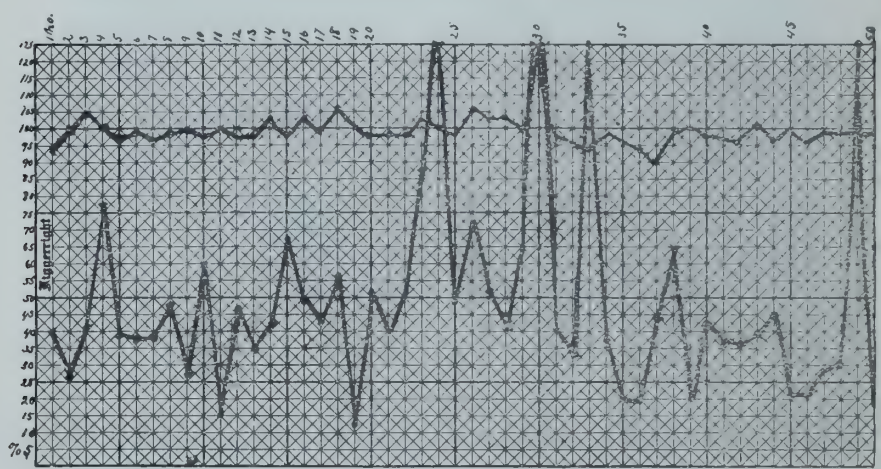


Chart Showing Graph for Finding the Estimate Cost of Plumbing Jobs.

each having inspectors to stop outside competition. This is due in a large measure to leaks that would not occur under a proper system of transacting business. Some expensive leaks occur in estimating the cost on contracts. Important items are omitted in the estimate that cut seriously into the net profit, or the cost is over-estimated and under close competition a profitable job is lost. These mistakes can be avoided by a proper system of computing cost. The material required on a job is the same when figuring as when installing. The labor under all circumstances is a more or less intelligent guess. By dividing a job into its natural divisions, water outside, water inside, sewer outside, sewer inside, stacks vent, lead work, gas piping, other piping (such as refrigerator waste, fire hose line) and miscellaneous, practically in the order in which the work is installed, and figuring each of these divisions as a separate job with its own list of material, labor, etc., reduces liability of mistakes. A closer estimate on labor can be made in sections than in lumping it all together at the end.

If a list of all material and labor likely to be used is printed for each division, and opposite this list a blank space for drawing a sketch of all pipes not shown on architects' plans, it will help in the superintending as well as in the estimating. A conception can be more clearly grasped by the intellect if a picture is presented before the eye. These divisions should be presented in the form of a booklet that can be carried in the pocket for figuring work on job or readily moved over an architect's plans, if figuring in an office. The totals of all divisions should be recapitulated to a page of totals and then added. If the job seems high or low either by itself or in comparison with any similar job, you can turn to any section that seems out of proportion and review that division. Your estimating book should contain a division for keeping actual cost so that when your job is completed estimate and actual cost are together for reference. By following this method on all jobs, large or small, less mistakes will occur than under any other system, each job acting as a check on all following work.

Referring to the accompanying chart, upper line 100 is taken as the estimated cost of each job. Dots at the intersection of each horizontal line is the actual cost. All below the 100 line cost the percentage shown less than estimated. Above the line cost percentage shown actual cost in excess of estimate cost. As job No. 1 cost 95 per cent. or 7 per cent. less than estimate. Job No. 2 cost ½ per cent. less than estimate. Job 3 cost 105 or 5 per cent. more than estimated, etc.

The lower line shows the relative cost of labor to material. Job No. 1, the labor cost 40 per cent. of material. Job No. 2, the labor cost 26 per cent. of the material. Job No. 3, 42 per cent. Job No. 4, 77 per cent., etc. Plumbers, $3.50 per day of eight hours; laborers, $2 per day of nine hours.

PLUMBING PRACTICE AT CLEVELAND.

The accompanying sketches republished from Domestic Engineering show the suggested lay-out of plumbing in bathrooms as contemplated under the proposed Cleveland plumbing ordinance, which has been discussed so thoroughly amongst the trade across the line during the past two years.

The upper portion of fig. 1 shows the plan of the piping, while the lower portion shows the elevation. The dotted line shown in the lower portion of the drawing indicates what the run of waste and vent pipes would be on floors below the highest. In this lay-out it is designed that if traps are more than five feet and not more than ten feet from the stack or the vent pipe, an approved resealing or anti-syphon trap may be used. When the building has five or six floors the main vent should be increased to 2½ inches at the fourth floor branch. In case there are from seven to ten floors the main vent should be increased to 3 inches at the sixth floor branch and the soil vent to 5 inches. The bath tub wastes must discharge above the center line of the closet discharge pipe.

Fig. 2 shows a proposed layout for the same number of fixtures in a bathroom, but arranged in a different manner. In this sketch the upper portion shows the plan of the piping while the lower portion of the drawing indicates the elevation. The dotted lines indicate the run of waste and vent pipes from floors below the highest. If this plan of laying out the plumbing is adopted it is contemplated that if traps are more than five feet, and not more than ten feet from stack or vent pipe, an approved resealing or anti-syphon trap may be used. It is believed that this arrangement is good for four floors with a 2-inch main vent, and for five and six floors the main vent should be increased to 2½ inches at the fourth floor branch. For seven to ten floors the main vent should be increased to 3 inches at the sixth floor branch and the soil vent to 5 inches. In this design the bathtub wastes must be discharged

above the center line of the closet discharge pipe.

Fig. 3 shows the lay-out of three fixtures in a bathroom, either used single or double, used for three floors, with a 2-inch vent. If traps are more than five feet and not more than ten feet from the stack or vent pipe, an improved resealing or anti-siphon trap may be used. For four to six floors the main vent should be increased to 2½ inches at the fourth floor branch. For seven to ten floors the main vent should be increased to three inches at the sixth floor branch, and the soil vent increased to five inches. The branches must discharge above the center line of the closet discharge pipe.

The designs were prepared by H. J. Luff, plumbing inspector, Cleveland. Any readers who can suggest improvements or criticise the lay-outs are invited to send their opinions to the Plumber and Steamfitter.

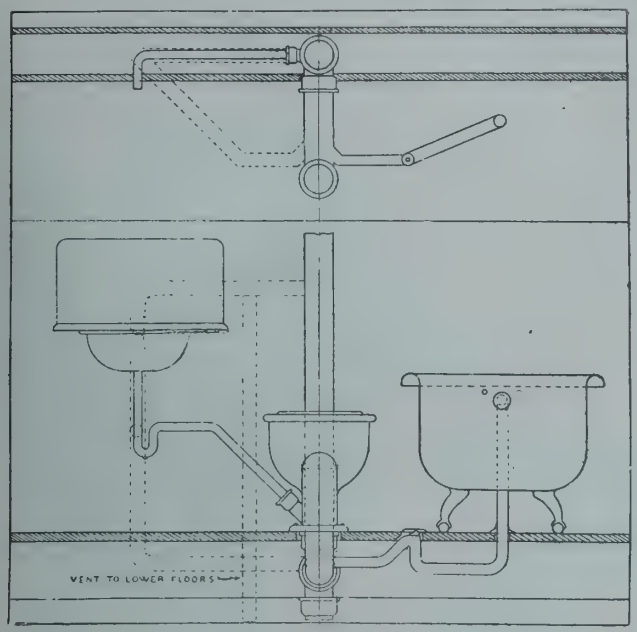


Fig. 1.

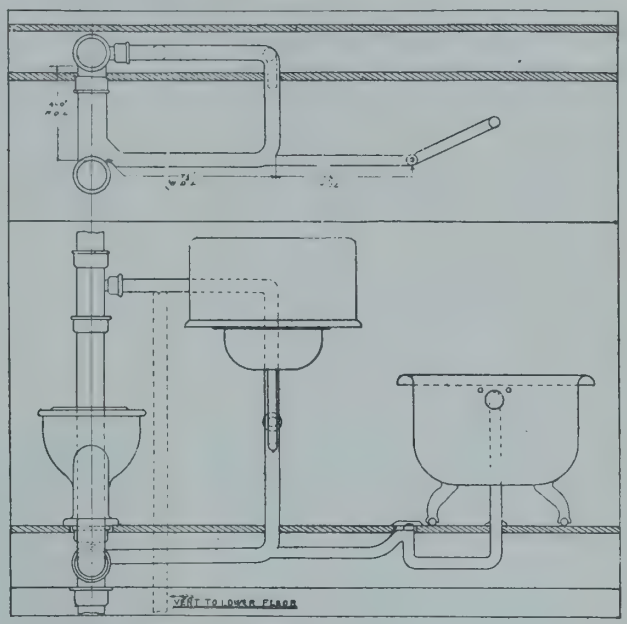


Fig. 2.

CHLORINE GAS TO PURIFY SEWAGE.

Col. Sam Hughes, M.P., Lindsay, has supplied Toronto civic officials with pamplets entitled, "A System of Sewerage Purification." Here are a few of the good points Col. Hughes cites in favor of his scheme :

The area required for the entire plant is small. The whole system would take up only about one hundred feet along the sewer, while a lot fifty feet wide would be ample for the gas producer.

The cost of installation, maintenance, and attention is a minimum. Working automatically, the system would require the attention of only one man. Its complete installation for Toronto would cost a mere trifle.

Instead of citizens objecting to locating the purifying station near them, it would be welcomed, as guaranteeing pure water along the shore in the immediate locality.

It would destroy everything objectionable in the sewerage.

It is estimated that the cost of treating sewerage with chlorine (in the form of bleaching powder) at the rate of five parts to a million parts sewerage would be $1.05 per million gallons of sewerage.

There is a probability of the Dominion Iron & Steel Co. at Sydney, C.B., enlarging its operations by manufacturing lime and the various by-products of its iron plant.

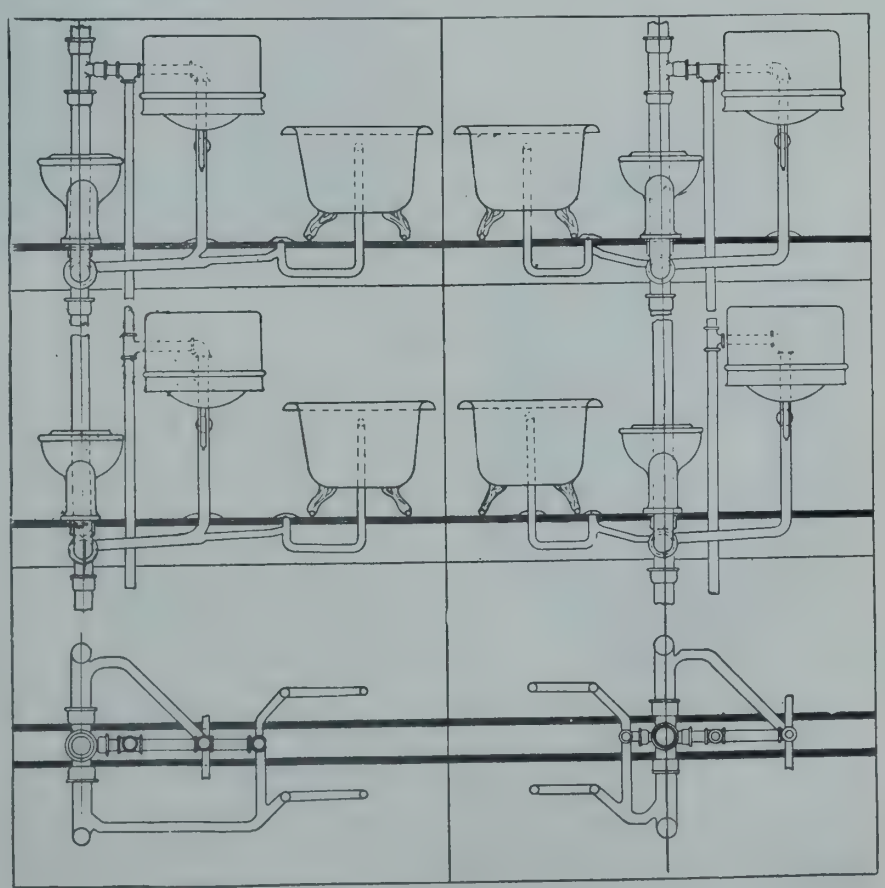


Fig. 3.

NEWS OF THE TRADE IN CANADA

The Galt Brass Company is exceptionally busy, additional mechanics being taken on.

A new sedimentation basin built under the supervision of Willis Chipman is now in use by Saskatoon.

Samuel A. Wye, heating engineer, has moved his office from Nelson, B.C., to 1221 Granville St., Vancouver.

The Sydney Foundry Co. have installed a new heating system in the Jubilee Methodist church, Sydney, C.B.

J. Stanley Richmond, electrician, Toronto, is at Wellington, installing an electric light system for W. P. Niles.

J. C. Wilson, formerly calling on the plumbing trade in Toronto, has taken Angus Groff's place on the sales staff of Cluff Bros.

The death occurred at Ottawa on January 1 of Michael Johnston. He conducted a tinsmith and plumbing business for nearly half a century.

Sam. H. Thompson, the new lessee of the Rossin House, Toronto, will add 100 bathrooms to that hotel next May, or earlier if he can get possession.

Andy Mann, formerly of London and Toronto, has accepted a position with the James Robertson Co., Montreal, in charge of the smelting department.

W. S. Brock, Winnipeg, manager of Somerville Ltd., and the Standard Ideal Co., is in the east visiting the head offices of these concerns at Toronto and Montreal.

The Canadian Brass Company, Galt, with the exception of a short time when the factory was entirely closed, has never even been on short time, and to-day is busier than ever.

Plumbing business in Chatham, Ont., is holding up well. Several plumbers report having orders enough ahead to keep their men busy pretty nearly full time for the rest of the season.

The Gurney-Tilden Co., Hamilton, is bringing out a new boiler, called the "New Ideal" this year, to be pushed in connection with the radiators they have been manufacturing for some years.

Fred. E. Ellis, lately with the Gurney Foundry Co., has accepted a position with the Gurney-Tilden Co., Hamilton, and will cover the territory west of Brantford and to Windsor and Goderich, making London his headquarters.

John E. Myers, plumber, Cottingen Street, Halifax, was presented on New Year's eve with a silver cruet stand, by his employees, accompanied with an address, which was signed by all of the employees of the firm. Mr. Myers acknowledged the gift in suitable terms.

City Electrician McCulloch presented a report to the civic water committee, Vancouver, showing that there was a leakage of electric current from the tram tracks to the water mains, thereby causing an electrolytic action on the pipes, which was working damage.

Of all the Guelph plumbers, it is said, that only two have paid their licenses. City Treasurer Scroggie told the chief of police about the delinquent plumbers and it is likely that they will have to settle with the magistrate if they do not soon settle with the city treasurer.

The cement work was completed on the new reservoir of the International Water Company at Stanstead, Quebec, last week. The combined supply from the Terrill, Priest and Montle springs was turned in and water was flowing through the waste pipe about fourteen hours later.

The firm of Ingram & Davey, plumbers, tinsmiths and hardwaremen, St. Thomas, has been formed into a joint stock company, capital, $100,000, with the following shareholders: Geo. A. Ingram, Geo. W. Davey, Geo. A. Ferguson, Samuel Ingram, Mrs. Agnes Davey and Mrs. Tessie Ingram.

The Plumbers' and Steamfitters' Union, of Winnipeg, held a most successful smoking concert last week, having an attendance of over 300 at the Trades' Hall. President Guy English occupied the chair and presented the various items of a very interesting programme. A short address was delivered by W. J. Bartlett, president of the Trades Council.

The new soil pipe being put on the market this year by the Standard Ideal Co., Port Hope, consists of two styles one being plain and the other being enamelled inside and out, the enamel being intended to make the pipe acid and rust proof and free from sand holes. The pipe is made by machinery and it is claimed for it, that it is absolutely uniform in thickness.

McKelvey & Bush, Brock Street, Kingston, have just completed the work of putting in the heating system for the Farmers Bank and Bank of Montreal at Trenton, and the Bank of Montreal at Stirling. The firm has twelve contracts for plumbing and heating at Picton. This firm always has a rush of outside work and has a wide reputation for good work. Last season the firm fulfilled contracts in Quebec.

Pipe and Boiler Insulation Catalogue No. 100, has been issued by the H. W. Johns-Manville Company, New York and Toronto, it being devoted to a thorough presentation of the problems of insulating all kinds of heated and cooled surfaces, such as pipes, boilers, furnaces, flues, ducts, etc., as well as insulation for refrigerating and cold storage work. A copy can probably be secured by addressing the Toronto office of the company.

R. Bigley, Toronto, is having a large new foundry erected at the head of Macdonell Avenue, Toronto, on a site adjoining the Grand Trunk and Canadian Pacific Railways. At his present foundry at Queen and Mutual streets, Mr. Bigley already makes a hot water boiler, domestic water heaters and nipples. When the new foundry is erected he will manufacture a complete line of cast iron fittings, and will push his goods more actively amongst the plumbing and heating trades.

The plumbing by-law, which was drafted several months ago and which has not yet been finally passed by the committee of the Vancouver city council, having the matter in hand, will have another amendment added to it. This will allow what is known as the Durham system of plumbing. This type of work is specially designed for high buildings, and uses galvanized iron piping instead of the cast iron, as demanded by the present regulations. By the use of galvanized iron, the pipes can be threaded and joined in this manner, rather than by caulking as is necessary with cast iron pipe, a certain amount of elasticity being also given the work. The new system has been permitted in special instances in Victoria, the Empress and the King Edward Hotels being thus equipped.

Notre Dame de Grace, Que., gets its water from the Credit Municipal Canadien, with which it made a twenty-five year contract, obtaining an option to purchase the company's plant. The company is now, it is understood, willing to sell, and an agitation is arising in the municipality in favor of the purchase. Some negotiations have been had with the Montreal Water & Power Company, but these have come to naught, the councillors being apparently convinced that their interests are well served by the Credit Municipal Canadien.

At the last regular meeting of the Plumbers' and Steamfitters' Union, No. 62, Winnipeg, the following list of officers was elected for 1909:—President, Guy English; vice-president, J. J. McRae; recording-secretary, C. H. Timberley, Orris Block, Nena Street; financial-secretary, F. J. King, 888 Strathcona Street; treasurer, J. Curle; conductor, G. Jupp; warden, R. McNeil; business agent, F. J. King; delegates to Trades and Labor Council, J. Fitzgibbons, R. McNeil, J. J. McRae; delegates to Building Trades Council, Geo. Hamilton, C. H. Timberley, Boyd Miller.

A temperature regulator for application to house heating boilers or furnaces, known as the Honeywell, has been developed and tested by the Honeywell Heating Specialty Company,

ALD. HARRY MAHONEY, GUELPH.

Wabash, Ind. Briefly described, it includes a neat device, the thermostat proper, placed on the wall of the room to be controlled; a lever by which the check damper and the ashpit door are opened or closed, as the case may need, and a motor attached to the lever and operating in an ingenious fashion to throw on or off the draft as required.

ALD. NORMAN W. CLARK, HAMILTON.

The thermostat in its operation closes a circuit when the temperature rises too high or falls too low, and the closing of the electric circuit puts the motor into operation. The motive power is obtained from a 6-lb. weight suspended from a drum by means of a brass wire cable wound around the drum. The way in which the unwinding of the drum is made to swing the lever alternately in one position or the other, according as the fire is to be checked or allowed to burn briskly, is indicated in a circular prepared by the company for general distribution.

PLUMBERS IN MUNICIPAL POLITICS.

Very few master plumbers took part in the recent municipal elections in Ontario, although there is no class of men who ought to be more interested in the building up of their towns and none who can give better services to their fellow citizens than master plumbers.

MAYOR W. H. WESTMAN, CHATHAM.

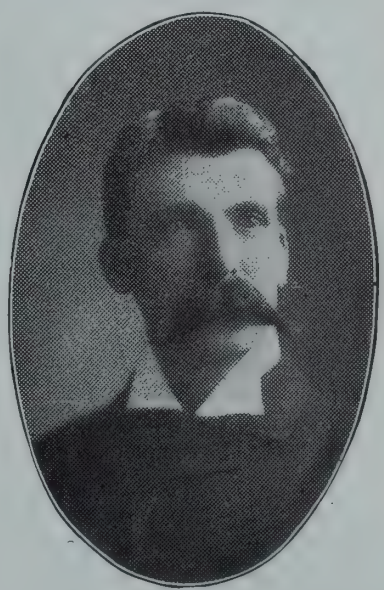
Every development of a town or city means new factories and residences, increased hotel accommodation and a growing need for better public buildings—all of which means work for the plumber and heating contractor, with the man in public life having the best chance to get the business. And every municipality has its problems of lighting, water supply and waste disposal, matters regarding which the plumber is, or ought to be, the best posted man in his community.

Toronto plumbers apparently took a greater interest in civic affairs than the trade in other places, one plumber being elected in the person of Albert Welch, while two others, Robt. M. Youmans and Fred W. Jenkins, met defeat, the latter being president of the journeymen's union. In West Toronto Sam Ryding, master plumber, was elected an alderman.

At Chatham Ald. W. H. Westman, hardware merchant and master plumber was elected mayor. At Hamilton Ald.

ALD. ALBERT WELCH, TORONTO.

Norman W. Clark, of Adam Clark & Sons, was re-elected alderman and at Guelph Ald. Harry Mahoney, treasurer of the National Association of Master Plumbers, was re-elected to the City Council by acclamation.



ALD. SAM RYDING, WEST TORONTO

The editor of the Plumber and Steamfitter will be pleased to receive the names of other men in the plumbing and heating trade who have been elected to municipal offices in any part of Canada.

CONTRACTS AND BUSINESS OPPORTUNITIES

Municipal Undertakings.

Burlington carried a by-law in favor of a waterworks system.

Almonte carried a by-law to raise $15,000 for street improvements.

Hamilton carried a by-law to expend $65,000 on the extension of sewers.

The new waterworks tunnel under the bay at Toronto is proving satisfactory.

The by-law to expend $3,000 on waterworks extension was defeated in Port Elgin.

The by-law to expend $60,000 on children's play grounds was defeated in Ottawa.

The by-law to expend $40,000 on septic tanks in St. Thomas was carried by a good majority.

The by-law to provide $12,000 for electric light department carried by a big majority in Barrie.

Meaford carried the by-law to put in a new filtering basin in connection with its waterworks system.

The by-law to enlarge the sewerage disposal system, involving an expenditure of $25,000, was carried in Stratford.

The Light, Heat and Power Co. again threatens to shut off the electric lights at Montreal unless an agreement is reached.

Galt defeated a by-law to raise $10,000 for good roads, and also a by-law to purchase additional land for park purposes.

Eight money by-laws for various works, including $25,000 for further power development on the Current River, carried in Port Arthur.

The Ontario Government have approved of the good roads proposals for Frontenac County. The total expenditure will be $160,000. There are 104 miles of road to be improved.

Victoria has secured $1,200,000 with which to instal a new water system. It is proposed to lay pipes from Sooke Lake, 15 miles from the city. It will take two years to complete.

Three money by-laws: $30,000 to purchase Exhibition Park; $49,000 for Smith Street bridge, and $21,500 for street extensions already made, were defeated in Peterborough.

An ammonia plant is the latest civic revenue producer in St. Thomas. The 6,000 tons of coal carbonized yearly at the works will produce about 18,000 pounds of ammonia, giving the department a revenue of $900 yearly on an investment of $2,000.

The B.C. Government have awarded the contract for planking the streets and laying sidewalks on the central section of the Prince Rupert townsite to W. W. Forrester, of New Westminster, his tender being the lowest. The contract price is about $200,000.

In a score of municipalities in Ontario on election day by-laws were voted upon in connection with the Ontario Government power scheme. In all but two places—Brantford and Kingsville—the verdict of the ratepayers was favorable, which means that the scheme of Hon. Adam Beck will have to be extended and the operation of the Hydro-Electric Commission enlarged as far as Detroit and the St. Clair River. The work of the Niagara Falls Power Commission is evidently appreciated by the people. The places in which the by-law carried are: Amherstburg, Bothwell, Chatham, Comber, Dresden, Dundas, Elmira, Essex, Glencoe, Leamington, Norwich, Port Stanley, Ridgetown, Sandwich, Simcoe, Stratford, Tilbury, Tillsonburg, Walkerville, West Lorne, Windsor.

Public Buildings.

A new firehall will be built on Charles St., Vancouver.

Elora carried a by-law in favor of a free public library.

Mount Forest carried a by-law to establish a free library.

The Carnegie Library by-law was carried in Strathroy.

Port Arthur will erect a Collegiate Institute, to cost $60,000.

Amherstburg defeated a by-law to erect a new public school.

The by-law to erect a new $20,000 high school was carried in Oshawa.

An addition is proposed to be built to the present general post office at Toronto.

The citizens of Welland defeated a by-law to raise $15,000 for a new public school.

The by-law to issue $100,000 debentures for a new Collegiate Institute was defeated in Brantford by a majority of 783.

The by-law to expend $200,000 on hospital improvement and extensions in Toronto carried by a substantial majority.

The by-law to raise $30,000 for increased accommodation for nurses at the city hospitals in Hamilton was defeated.

By-laws to appropriate $15,000 for a ward school, and $3,000 for an isolation hospital were carried by large majorities in Waterloo.

Brantford defeated the by-law for a grant of $5,000 for a nurses' home in connection with the John H. Stratford Hospital in that city.

Ottawa carried a by-law authorizing improvements to the city market, but defeated a by-law to expend $60,000 on an extension of the city hall.

Niagara Falls carried three by-laws: $3,000 for a site for a new $45,000 armory; $8,000 for new fire hall, and $2,500 for a location for a $12,500 Carnegie Library.

The by-law to appropriate $5,000 for a consumptive hospital was carried in London. The by-laws to provide public swimming baths and public play grounds met with defeat.

The Dominion Government has again taken up the post office building question at Toronto and will likely build near the new station when the viaduct matter is settled.

General Building Notes.

R. E. Sherlock, Lethbridge, will build a $17,000 business block.

Douglas & Thorley, Vancouver, propose to build a $20,000 hotel.

A. Filion, Vancouver, will spend $15,000 on additions to his building.

The Codson Block, a commercial building at Vancouver, will cost $50,000.

The National Finance Co. will erect a $30,000 business block at Vancouver.

The Canadian Bank of Commerce will erect a $40,000 bank at Lethbridge, Alta.

Toronto's building permits for the first week of the new year were valued at $42,500.

Bauer & Harrison will erect a $150,000 steel and concrete hotel at Vancouver.

Victoria's building permits for one day last week totalled $8,000, most small dwellings.

J. G. and E. Y. Lightheart, Vancouver, will spend $15,000 on a block of six dwellings.

Gordon & Campbell will erect a $25,000 store and apartment building at Vancouver.

Plans are being prepared for the erection of a new three-storey hotel at Lethbridge.

Denison & Stephenson will erect a three-storey business block in Toronto to cost $15,000.

The Banfield building, a $20,000 tenement structure, will be erected this season at Vancouver.

The Vancouver Horse Show Association have been granted a permit for a $45,000 structure.

A $15 000 building to be called the Fuller Block, will be erected at Vancouver this season.

Dr. L. McKechnie will make alterations to his office building in Vancouver which will cost $10,000.

Plans for buildings valued at $250,000 are being considered by the Vancouver building inspector.

Vancouver will have new stations erected by the Great Northern and Northern Pacific Railways.

P. Burns & Co.'s block at Wetaskiwin, Alta., was burned at a loss of $70,000. It will likely be rebult.

The total value of building permits in Toronto for 1908 was $12,447,467, as compared with $14,225,800 during 1907.

The building permits in Stratford during the past year totalled $136,545, as compared with $641,485 of the year previous.

Permits numbering 32 and valued at $74,170, were issued at Vancouver during the week between Christmas and New Year's.

The number of building permits issued in Montreal during 1908 was 1,283, and the aggregate value $4,317,753, which was $3,343,903 behind the year previous.

It is understood that a new wing will shortly be built to the Ontario Legislative Buildings. In it will be located the library, archives, patent surveys department, etc.

Victoria, B.C., issued building permits to the extent of $1,121,140 during 1908. In the last fifteen years new structures have been erected in Victoria to the value of nearly $9,000,000.

Recent building permits in Toronto include: Mrs. M. Wright, dwelling, $3,500; Wm. H. Coon, pair dwellings, $3,500; R. C. Bustard, two dwellings, $4,000; J. T. Hutson, dwelling, $3,500; H. Huston, dwelling, $3,500; G. H. Weale, & Son, dwelling, $3,300; W. Hughes, pair dwellings, $4,600; Wilkins & Co., two dwellings, $7,000; John Houden, dwelling, $3,000; F. Courtmanche, dwelling, $3,200; F. G. Mara, dwelling, $6,000; W. H. Carter, dwelling, $2,200; Gratton Bros., dwelling, $3,600; W. Bebbington, dwelling, $3,000; Kay Bros., two detached dwellings, $9,000.

B. C. PLUMBERS.

John Colbert, plumber, Victoria, reports the following as some of his contracts for this year: Home for Infirm Women, Detention Hospital, Ladysmith post office, Cumberland post office, addition to Victoria post office, Pacific Club building, Nurses' Home for Royal Province Jubilee hospital, Union Club of British Columbia, Victoria Transfer building, Mahon building, Victoria West school, Bakeries Limited, building, Merchants Bank, Colonist Printing and Publishing Co., University school, Bjornfelt building, Turkish Baths, Pither & Leiser building, Mable block; residences: A. D. Crease, C. F. Todd, J. J. Shallcross, R. Finlayson, J. McCandless, F. B. Pemberton, G. A. Kirk, D. H. Bale, S. J. Pitts.

Moscrop Bros., plumbing and heating contractors, Vancouver, report the following principal contracts: Victoria block, St. Paul hospital, Mrs. McNeas' apartment house, Elsmere house, Empress hotel, Harris & Gregg, apartment building, Mrs. Beecher's residence, P. G. Drost block, G. Huxtable block, Drost & Turnbull block.

R. J. Nott, plumber, Victoria, furnishes this list of plumbing jobs finished or contracted for: In Vancouver—Austin hotel, Granville mansions, Blackburne hotel, E. Hobson, residence; Provincial Government Industrial schools, Point Grey; Dr. Munroe's residence. In Victoria; Empress hotel, King Edward hotel, Coleman McPherson, residence; D. C. McKinnon, house; James McDonald, house; Chemainus general hospital, Merchants Bank,; Hon. James Dunsmuir, residence; John Arbuthnot, house.

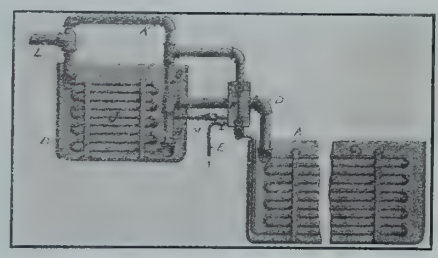
Barr & Anderson, Vancouver, report plumbing contracts as follows:—P. Tardiff, National Con. Co., J. P. Mathieson, M. C. Griffiths, W. L. Tait, W. R. A. Mathee, Walsh apartments, P. Tardiff, John Burns, D. Gibb & Sons, B.C.L. Investment & S. Co., Hood apartments, Winters Hotel, Harrison Hot Springs Hotel, Kelly Brothers & Mitchell, Mills & Williamson; R. Rice, St. Joseph Hospital, Victoria, Wing Sang Co., Palace Hotel, B.C. Electric Co., J. J. Dissette, Franklin Bros., Grand Trunk Pacific Railway, Prince Rupert, Macaulay & Nicholls, H. P. Wright, J. Leckie & Co., Spencer's Building, Drost and Turnbull.

The list furnished by W. A. Brown, Vancouver, includes contracts for the following: Kwong Sang Co., Lett Building, Market Building, Kamloops Court House, Dehosier Building, Vancouver General Hospital, Macaulay and Wehner Building, Calore Building, Canadian Bank of Commerce.

Some of the work of the Vanstone Heating & Plumbing Co., Vancouver and New Westminster, includes: Martin & Robertson Block, Gray & Barrie Block, Mayfair Apartments, Von Alvensleben Block, Wilson Hotel, Nanaimo, Windsor Hotel, Nanaimo, Western Explosive Works, Bowne Island, Monkey House, H. D. Green-Armytage's residence, North Vancouver, Bond Apartment, Burris Block, E. P. Charlston's store, Roberts Block.

REFRIGERATING APPARATUS.

The refrigerating apparatus illustrated herewith is arranged to maintain the expansion coils substantially filled with the liquid ammonia, and to prevent the return of the ammonia in a liquid form to the compressor. In connection with the main expansion coils there is an auxiliary coil, which is adapted to preliminarily cool the water to be frozen, and this coil is connected to the rest of the system in such manner that the liquid and gas from the expansion coil are separated, and only the liquid is delivered to the preliminary cooling coil. In the illustration the tank in which the main expansion coils are located is indicated at A, while the preliminary cooling tank is shown at B. The liquified ammonia is fed to main expansion coils C through the high pressure conduit E, and the discharge takes place through the pipe D. The pipe D connects with a vertical conduit, one



Improved Refrigerating Apparatus.

branch H of which communicates with the preliminary cooling coils J, while the other branch G connects with the conduit K, and thence by way of pipe L to the compressor. Such of the ammonia as reaches the vertical conduit in a liquid form from the main cooling coils, will drop into the branch H, while the gas will pass up by way of the branch G to the compressor. Inserted between the high-pressure conduit E and the coil C is a chamber F, provided with a gauge glass whereby the operator can observe the height of the liquid. The ammonia is cooled by its own vaporization in this chamber F, so that at the time it enters the expansion coils it is at a very low temperature. Any gas which may form from the vaporization of the liquid in the chamber F will pass directly to the compressor through a pipe leading from the top of the chamber. In case too large a quantity of the liquid is carried from the expansion coils to the preliminary cooling coil, so as to raise the level of the liquid in the latter dangerously near the level of the pipe D, a valve may be opened in the branch pipe M, permitting the liquid in the coil to flow into the chamber F, and thence again to the main expansion coil. John D. Mayhew, of Tyler, Texas, has been granted a U.S. patent on this apparatus.

PLUMBING AND HEATING MARKETS

MONTREAL.

January 12.—Trade conditions on the quiet side. Naturally not much material is being consumed just at present, although the recent spell of warm weather enabled construction work to be pushed on more briskly, thus allowing plumbers to start their work sooner than was expected. Jobbing houses are now busily engaged in going over their stocks and placing their orders. It is a good sign that buying is more heavy this year than last, and confirms the general opinion that the year will be a good one for the plumbing and allied industries. Manufacturers state that they are well supplied with orders, giving the factories plenty ol work for some time to come, while others who have to carry large supplies are losing no time in stocking up. The whole tone of the market is good. Architects are busy, and while the majority of the plans have not yet been accepted, several good contracts have already been pushed through.

There is practically no change in the markets, although there is a tone of firmness which seems likely to develop into an advance. This is apparent more particularly in brass goods.

IRON PIPE—There has been an improvement in the demand, and it is evident that users are stocking up. The strong tone of the market is probably responsible for this. Supplies are said to be in good shape. We continue to quote: ½-in. black, $2.63; galvanized, $3.48; 1-in. black, $5.11; galvanized, $6.76.

SOIL PIPE—Soil pipe continues quiet. Orders for spring delivery are getting heavier. The market is firm and we quote: Light, 3 to 6 in., 60 off; medium to heavy, 2 to 6 in., 70 off; 8 in., heavy, 40 off.

LEAD PIPE—The demand has improved somewhat. A fair quantity of pipe is being used, while other shops are adding to their stocks. The market is steady and we continue to quote: pipe and waste at 27½ off. Traps and bends at 50; calking lead at 5c per pound.

SOLDER—This line continues quiet. Solder is not being extensively used at present. We continue to quote 19½c for half and half and 18½c for wiping.

BRASS GOODS—The higher grade articles have a firm tendency and higher prices nay come at any time. The demand is somewhat better, the tone of the market stimulating orders. Inferior brass lines are still being cut to force sales. We quote: Standard compression work, 70 per cent.; fuller work, 70 and 10 per cent.; flatway stop and waste cocks are 65 per cent.; round way, 50 and 10. Compression bath cocks (No. 4), $1.65, and No. 4½ Fuller's, $2.00.

RADIATORS AND BOILERS — The demand has kept up very well and some good orders have been placed locally. Although cutting is going on there is no change in published lists, which are as follows: Radiators at 52½ and boilers at 50 and 10 off. Steam fittings are 66 2-3 off.

Manufacturers are working at full pressure on their supplies.

METALS—There is no change to the metal situation, although copper is being stiffened in the primary markets by manipulation, and if this is continued, local prices will follow. We quote: Ingot copper, $15.50; ingot tin, $33; lead, $3.70; pig iron, Middlesboro No. 1, $18.50 to $19; Summerlee, $20. Heavy scrap red brass is 10½c; light copper, 10½c; heavy lead, 2½c.

TORONTO.

Toronto, Jan. 14.—No radical change has come over the plumbing situation during the last fortnight. The jobbing houses are looking forward to great business in the very near future and some one or two houses have already booked fairly large orders for delivery before March. Usually at this time of year the price lists and discount sheets undergo revision. As yet nothing has been done in this regard, but new discount sheets are expected to be ready in a few days. No great changes are anticipated, the prices rather tending to a firming up. Cutting continues in brass goods and fittings, but generally speaking there is a better feeling abroad among all jobbers.

The architects of Toronto expect the building trade in that city to be unusually busy this year. Some of these gentlemen have their hands more than full. Travellers representing jobbing hauses say the same condition prevails in Western Ontario, especially in Hamilton, Brantford and London. One Toronto plumber has nearly 60 houses to fit up before the early summer, and some others are doing both finishing-up and roughing-in work, this season being favorable for work both indoor and outside.

BRASS GOODS—A variety of prices prevail, some cutting still going on. Some of the older houses quote the same figures given out for the past several months for standard lines. Standard compression work is at 70 per cent.; fuller work ranges from 75 to 75 and 15; flatway stops and waste cocks are 65 per cent. and 75 per cent.; round ways are 50 and 10, and 70 and 10. The other lines are at the old figures. Good prospects are ahead, as some marine work is anticipated to be done between now and the end of March.

ENAMELWARE—A little slow compared with the fall is this line, but the volume of business is much ahead of what it was last January. Prices are unchanged.

IRON PIPE AND FITTINGS—Cutting is going on by some houses in this line. Cast is quoted at 70 and at 80 per cent. by standard houses, and malleable at 37½ and 40 per cent. 1-in. black is still at $5.11 and 1-in. galvanized is at $6.76. The other items under this head are at the regular quotations.

SOIL PIPE—Unchanged in price and rather light business being done. Light pipe is 60 and fittings 70 per cent.; medium and extra heavy pipe and fittings are 70 per cent.

LEAD PIPE—Finishing-up work still goes on and a good demand exists at unchanged prices. Calking lead is 4½ cents to 5c per pound; traps and bends, 50; and pipe and waste 27½ off.

SOLDER—This line is firming up and some houses quote an advance of half a cent, though a number of jobbers still keep the old figures. Wiping solder runs from 18½ to 19c, and half-and-half 19 to 20½c.

BOILERS AND RADIATORS—Again entering the interesting situation are heating goods, and from present indications this year's business will far surpass last year. Prices are unchanged and there is no probability of a change in the near future.

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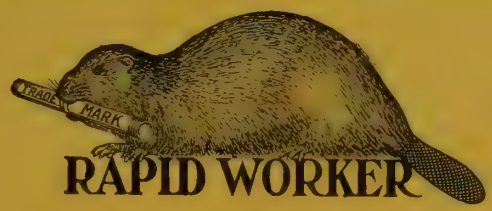

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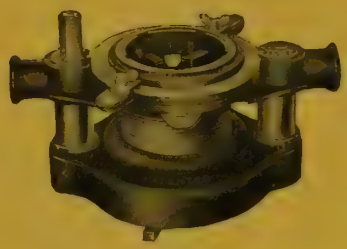

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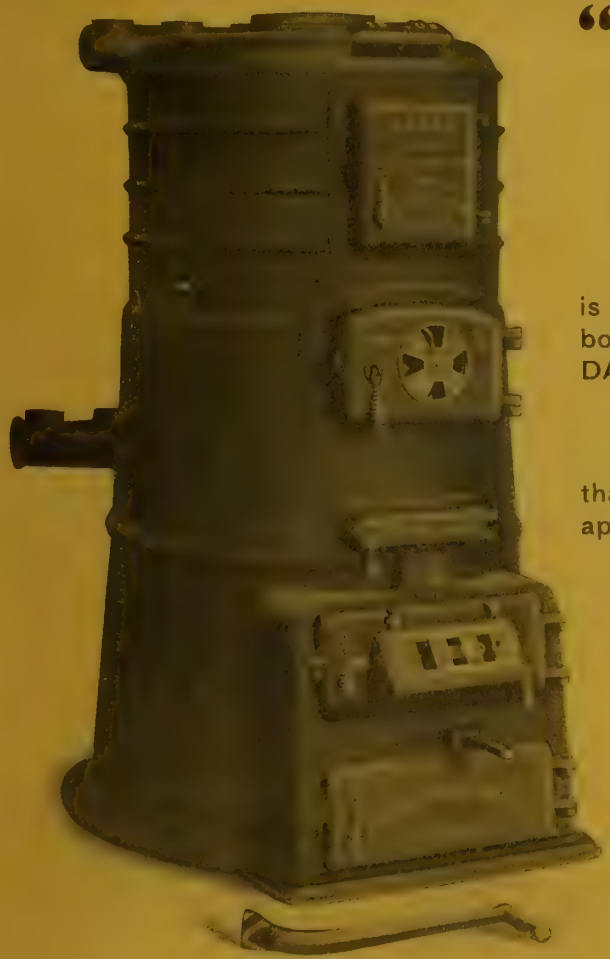

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Narrow, Easy-Cutting Dies for right or left-handed threads.

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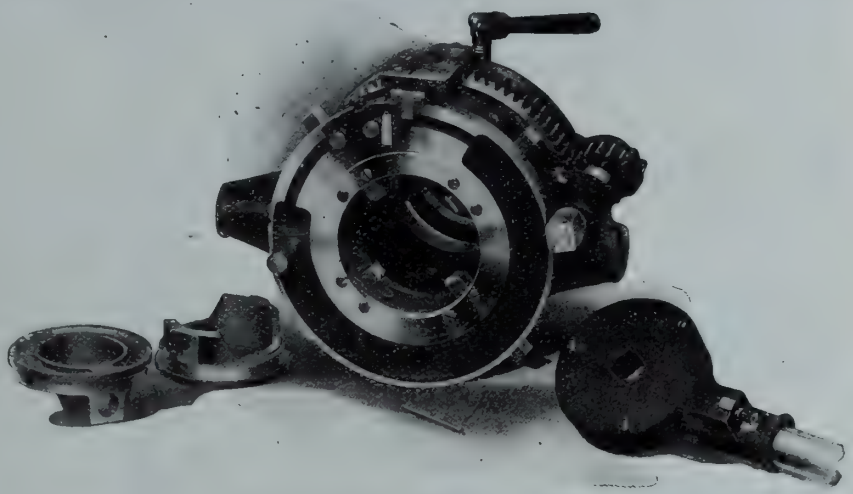

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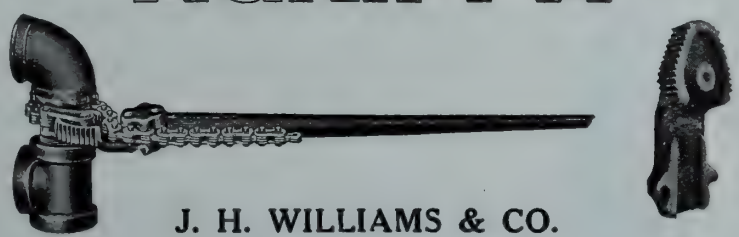

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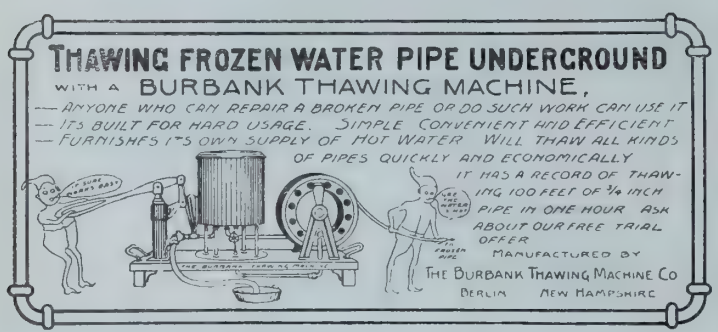
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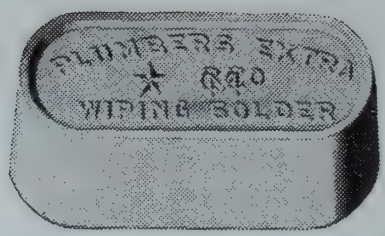

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Best Wiping Solder. Nothing like it. If your supply house has not got it, get it from the manufacturers.

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Don't hesitate to invest in whatever saves labor. You owe it to yourselves to use Brass Goods of merit.

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14,000 Systems in Use in America.

HONEYWELL HEAT GENERATOR

We have recently made arrangements to manufacture Honeywell Heat Generators in Canada and have arranged with the leading boiler and radiator manufacturers and jobbers of the Dominion to carry our specialties in stock.

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The Honeywell System has met with eminent success in America. It is used in every state of the Union where hot water heating is installed. It is not the coming but the system in vogue in the States, and it will be only for any fitter of Canada to try out one job according to our instructions to prove beyond question that the Honeywell System is all that is claimed for it.

Honeywell Heat Generators will cure sluggish jobs and double the efficiency of jobs where the piping and radiators are too small for the gravity system. A number of Generators have been attached to existing plants in Winnipeg, Ottawa, Montreal, St. Hyacinthe, St. John and other Canadian points with entirely satisfactory results. Let us refer you to a number of them, also to new jobs installed in the Dominion according to our instructions. Write for "Book of Plans" and "Illustrated Folders" of jobs installed in all parts of the country.

The Honeywell Heating Specialty Co.,

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M. D. Tillman, Box 1113, Montreal, Canadian Representative.

Plumber and Steamfitter

and Sanitary Engineer of Canada

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MONTREAL, TORONTO AND WINNIPEG, FEBRUARY 1, 1909

HEATING ENGINEERS' CONVENTION

The American Society of Heating and Ventilating Engineers held its fifteenth annual meeting at New York on Jan. 19-21, some valuable papers being read and discussions held thereon. Some of these papers will be reproduced in future issues of the Plumber and Steamfitter as they are worthy of study by Canadian heating contractors, as well as the more widely experienced heating engineers.

Two new Canadian members, S. R. Sheldon and A. H. Leach, both of Sheldons, Limited, Galt, were enrolled into the society since the last meeting, there now being six Canadians enrolled, only one of whom, however (C. E. Oldacre, of the Gurney Foundry Co., Toronto) attended the New York convention.

Some months ago it was suggested in these columns that a Canadian chapter of the Society be formed and it seems likely that such action will ultimately be taken. Heating engineers in Canada favoring the organization of such a Canadian branch should affiliate with the parent Society, and when the Canadian membership becomes sufficiently large it will be an easy matter to form a branch and possibly invite the Society to hold one of its summer meetings at Toronto.

A CLEAN SHOP HELPS BUSINESS.

The average plumber fails to realize the advantages of an attractive window. He imagines that because he does not sell over the counter like the hardwareman that the attention of the passer-by need not be attracted, and that the window may be empty so far as it is of any material gain to him. But this is a great mistake. Every business is the better for advertising, whether it be that of a merchant or of a handicraftsman. People are guided by impressions. The eye is allowed to control the mind in every direction. An employer in selecting a clerk from a number of applicants favors the one who, other things being equal, pleases him most in general appearance, the hackman who has the cleanest turnout gets the most trade, and the consumer favors the merchant who has the most attractive store.

Impressions play a large part in business, and it is foolish to imagine that the plumber's shop is exempt from the general run. Is it not natural that the plumber who is clean in his shop, should give customers the idea that he is also clean in his work? Impressions may be wrong, but that does not avail the good mechanic who hides his abilities under the disorder of an ill-kept shop. A plumber must advertise in one way or another, and if he advertises solely through his windows and signs, let him see that these are as attractive and as clean as they can be made.

If the plumber be in a position to carry out a good window design, he cannot have a better one than a bathroom. There need be no attempt at expensive tiling as seen in the show room of the large supply houses, only whatever fixtures are employed should be clean and arranged neatly. If possible have some of the appliances working. Connect with the main, and have a shower apparatus well to the front and running occasionally. If illumination can be afforded keep the window lighted during the evening. The porcelain, the nickel of the bathroom fittings, the reflection of the light on the running water of the shower, will make a window show that cannot fail to be attractive, and of great advertising help to the plumber. People talk of his windows, contractors are interested, and the plumber has done a great deal of good to his business. It may be that he cannot afford, and has not the window convenience, for such a display. If so he is able, at any rate, to keep what window he has clean and attractive, and the articles placed in it free from dirt, and arranged in an orderly manner, A good workman is known by the brightness of his tools, the good plumber is known by the neatness of his windows and shop.

PLUMBING INSPECTORS TO MEET.

The annual meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers in Omaha, February 8 to 10, will not be attended by many Canadians as the municipalities seem unwilling to make appropriations to send representatives. The society has a large membership among men who are daily brought into contact with conditions which would make interesting papers if described in detail, referring to the effect produced and the changes needed, and where changes are made explaining the result attending the rearrangement. The papers presented to the society a year ago have been widely published and have given the society a standing that only needs to be supported for it to enjoy permanently the respect of all sanitarians. The Programme Committee announces that a sufficient number of papers of interest to the members have been pledged to insure a meeting of more than ordinary interest.

Would it not be well for Canadian plumbing inspectors to join the Society and endeavor to have one of its conventions held in Canada to help wake up Canadian

municipal officers to the necessity of a thorough inspection of all plumbing work.

ST. MARY'S JOURNAL CODEMNS AN OLD SCHOOL.

The St. Mary's Journal, a progressive weekly paper, has been doing commendable work in awakening the people of that Ontario town to the necessity of having pure air in the schools and other public buildings. The Journal evidently believes in plain speaking as it refers to St. Mary's educational institutions as "antiquated, one horse, prison looking, ill smelling, badly heated, poorly ventilated, eye sores of school pens with sanitary arrangements that would disgrace any community."

The Journal goes on to say: "How extremely important it is that schools in all their appointments should be as near the ideal as possible. How culpably negligent, would be any community that would be satisfied with mediocre conditions. How criminally responsible, would be any community that permitted such conditions to exist, that from a sanitary, an aesthetic or an architectural point of view would not compare with the provisions being made by leading stockmen today for thoroughbred horses and cattle. Yet we unhesitatingly say, after personal examination, that the vitiated condition of the atmosphere in many of the rooms of the schools of St. Mary's in which both teachers and pupils are living and working is such, that for four hours out of the six of the schoolday, no modern stockman would permit them to exist. Just think of it—a man's monied interest in stock greater than his God-given love for children or humanity. It is impossible to take an old ramshackled building like the West Ward school, or other of the schools for that matter, and without any practical means of heating or ventilation but stoves and windows, have any better conditions than there are. And in this age of awakenment to the value of outdoor life, to compel educated men and women and growing children to live under such conditions when only the expenditure of money is needed to provide better, is nothing less than criminal in the eyes of an enlightened community."

Master plumbers, who know the value of pure air and pure water, owe a duty to the community in which they live in seeing that these requisites are provided their fellow citizens and the younger generation. If any school, church or other public building is poorly ventilated draw the attention of the local editor to the fact and ask his co-operation in agitating for better conditions. The St. Mary's Journal editor set an example for other editors to follow in exposing the out-of-date methods in his town. And any other live editor will follow the Journal's lead if they are given the tip to follow up. Are the buildings in your town properly ventilated?

WILL CHEAPEN SPRINKLER INSTALATION.

The heavy cost of the installation of automatic sprinklers for fire fighting has to a large extent militated against their installation up to date. This cost is attributable to the expense of submitting provisional plans and providing for inspection and also to the exacting demands which are made by the companies as to the character and extent of the equipment.

Sprinkler contractors have in the past had to send a representative to inspect, measure and lay out equipment, and the aggregate cost of three or four contractors doing this service must be added to the general cost of the business.

The insurance department of the Canadian Manufacturers' Association have now, however, established a department to act in the capacity of an architect to concerns desiring to install sprinkler systems, their draughtsman preparing on set of plans and uniform specifications on which the six sprinkler contractors will be asked to submit tenders. Besides preparing plans and specifications the department will superintend the erection of sprinkler systems under the regulations of any existing insurance organization. A saving, it is said, can be effected in this manner of from $200 to $500 for each installation, and this should result in a substantial increase in the number of installations.

Another fact of importance in connection with the same subject is that modified systems of sprinkler protection involving much less cost and carrying reductions in rates are receiving the attention of the department. There are many manufacturers who are not prepared to install these systems up to the exacting demands of the companies, but would readily provide a more modest outlay in consideration of receiving commensurate benefit.

The installation of sprinkler systems is the work of experts and consequently the business must continue to be done by a limited number of firms, four sprinkler heads being controlled by Toronto plumbing firms and two by Montreal houses. The average plumber may successfully handle repair jobs however, getting his supplies from one of the firms controlling a head.

Sprinkler heads are controlled by manufacturers in close touch with Underwriters' Association of America, and it is about as difficult to get a new head adopted as it is for a plumber to collect a bill a year or two old But aside from this the installation is of so technical a character that men of experience in this special work are preferred by the underwriters who control the situation.

IT PAYS TO BE CIVIL.

How one mistake may prove very expensive was shown by an incident related by a Toronto master plumber a few days ago.

Some years ago the plumber in question severed his relations with the firm he had been connected with. He had been letting the other member of the firm do the buying and was not known any too well in the supply houses, so when he called on the house he had selected to deal with he wasn't recognized and the salesman turned him over to an office boy to be served.

The plumber happened to want a certain old style lead tray to set under a closet and the office boy was unable to find the article without considerable annoyance to the customer. Finally, however, the plumber got what he was after and asked for the price. The office boy called upon the salesman for information and this high-and-mighty individual named a figure which caused the customer to reply that he was buying one and not a dozen. The price was handed over, however, without further argument, but an indelible mark was made in the mind of the master plumber.

That salesman became a traveler and later on a manufacturer but he never sold another cent's worth of goods to the successful firm the master plumber helped to build up, and though the master plumber is free to admit that his action is small-minded—it is unlikely that the incident will ever be forgotten.

Courtesy is one of the cheapest of business requirements, but is also one of the most easily forgotten. Have a kind word and a smile for every customer, whether poorly or richly dressed, and it will prove one of the most valuable of your business assets.

The Need of Public Lavatories

John R. Allen Tells What Has Been Done in European Countries and the United States to Meet a Growing Public Need—Vancouver Making a Start.

The public convenience station is not a new thing to the older cities of Great Britain and the Continent of Europe, in which they are to be found with pleasing frequency. In London each parish has erected and maintains its own convenience stations and many of them are models of construction. Most of them are constructed below ground, but where possible to construct them above ground it is far better as the beneficial effects of sunlight and air are secured. Glasgow, Edinburgh, Birmingham, Manchester, Dublin, Aberdeen and many smaller British cities have found the public convenience a necessity and are operating them under the fee system at a comparatively small cost. In Paris the public convenience is frequent enough, but is open to serious objection because it is neither cleanly or private. There are great steps to be taken in the construction and operation of these stations in that enterprising city. In Berlin, Dresden, Munich and other German cities, there are fine examples of public comfort stations to be seen, combining both utility and artistic treatment. In Denmark, Copenhagen and other cities are well equipped with conveniences of this character. In fact, go almost where you will among your older sister nations and you will find this very necessary adjunct to public comfort bountifully provided.

One of New York's Public Conveniences, Having Separate Entrances, for Men and Women. Vent Towers Support Electric Lights.

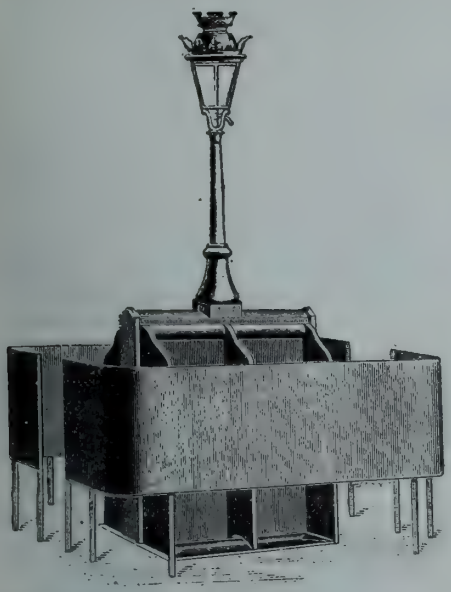
In America we have been dilatory in following this good example, but it is a matter of great encouragement that rapid progress is now being made, In New York the first public convenience was opened in Astor place in May, 1869, and after a varying period of usefulness it was abandoned because it was found to occupy too public a place. In 1896 a measure to give a monopoly of such public conveniences in New York to a private corporation was defeated, as it meant a practical surrender at a nominal rental of streets, avenues, parks and public places to a company who sought for a small sum the privilege of erecting kiosks to be disfigured with advertisements. More recently New York has erected numerous beautiful and well equipped stations and sets an example to other American municipalities which is very inspiring. There is no doubt that within the next few years, most American cities will be forced by an educated public demand to install public convenience stations, and it will be well to give careful consideration to some features of general application. The construction of any single station will involve problems peculiar to itself, but there are general principles which may be laid down which should govern the location and construction of this class of public utility.

The first element, perhaps, which enters into the problem is that of location. Bearing in mind that they are for public use, they should be placed where the public congregates in largest numbers. Consequently the most congested districts of a city should receive first attention. Market places, public squares, street railway intersections, parks and congested retail districts all offer good opportunities for locating public comfort stations. Fortunate is that city which has diagonal streets or frequent open spaces, either circular or triangular, or which has reserved to itself small squares in its congested portions, for these offer the ideal sites for such structures. Fortunate, also, is that city which, in having been so laid out, still has its alleys free from pipes, wires and other conduits, as in such cases the stations may be located underneath the alleys with approaches at the sidewalk curb. It is seldom that a city which has attained such a size as required conveniences of this kind will have its steeets free, so that the stations may be located underneath. As there is always a sense of fear on the part of mercantile establishments and

Public Comfort Station in Park at Worcester, Mass.

Toilet Station at Cleveland used in 1906 by 1,485,620 Men and 306,780 Women.

private buildings that the erection of such a convenience will prove depreciatory to the property, it is well to lo-

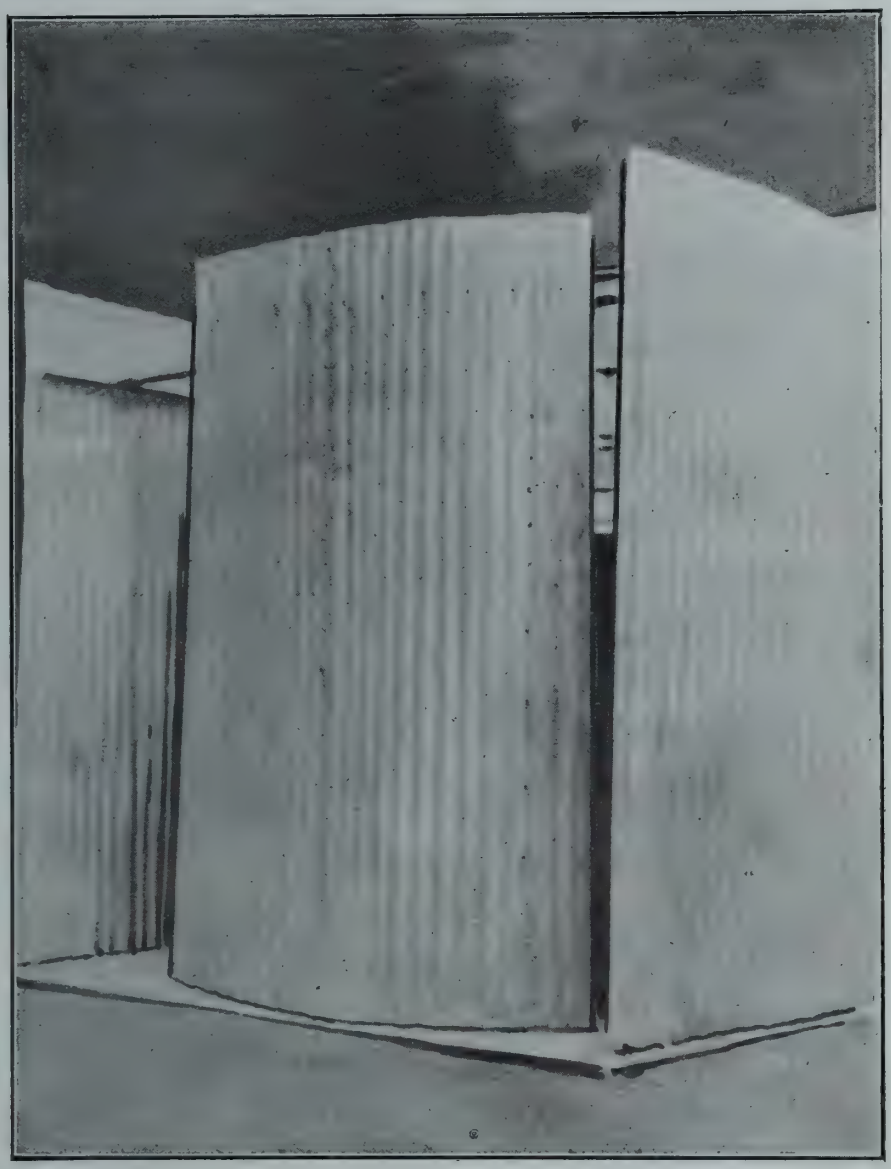


Indefensible Type of Convenience Advertised in French Catalogues.

cate them wherever possible upon property belonging to the municipality. And it is perfectly proper and, indeed, should be considered obligatory by a municipality, to construct such stations in connection with its public buildings such as city halls, police stations, court buildings, fire stations, and in connection with public schools, wherever it is

An Unsightly and Immodest Structure Found on the Paris Boulevards.

possible without combining the toilet facilities with those for the children. In all these cases it must be considered essential that the entrance to the public convenience station shall be from the sidewalk so that it shall not be necessary for a person seeking such accommodation to pass through the corridor of a public building and be required to seek information as to its location. In cities where elevated railroads are constructed it is sometimes possible to combine the entrance to the station with the stairway leading to the railway. In cities contemplating building of subway systems, similar to those in Boston and New York, and to that which must ultimately come in Chicago, every station should have in connection therewith, with access from the street, a public convenience station for free use.



Vancouver's Objectionable Type of Public Lavatory.

Vancouver's Public Conveniences.

For some years past Vancouver has had public urinals, located in lanes in the busy portions of the city, being simply enclosures of corrugated iron. They have been condemned by Dr. Underhill, medical health officer, who has approved of the structure, more modern and sanitary, as shown in the accompanying photograph. Dr. Underhill is an Old Country man, and knew of the conveniences in the large cities there, and secured plans of those in existence in Glasgow. His object was to get one erected, and then when the aldermen saw the great benefit it was, without being an unsightly building, he thought he would have little trouble in getting further appropriations for a similar purpose. Accordingly, one was built on Alexander Street, adjacent to the wharves, where it is proving a great blessing. It is of iron on cement base, the only wood being the doors. There are six urinals and five closets, all with automatic and continual flush. The porcelain urinals are models in arrangement, and any foreign substance, such

as cigar or cigarette stumps, etc., are carried to a lodgment, from which they may be easily removed.

Only in few cases in Vancouver can underground places be constructed, but Dr. Underhill is working hard to have these conveniences in different parts of the city. No charge is made at present. The currency here does not go so low as coppers, five cents being the lowest piece of money, consequently the penny in the slot convenience, such as is found in the Old Country and Australia and Europe cannot be utilized, and five cents is thought too much.

Although the lavatory provided has proven an unqualified success the committee of the city council has been dilatory in having others installed. Pandering to the local vote, they state that tenders should be called for. The only tender received was from W. A. Brown, plumber, who installed the present lavatory, and who imported the materials from McFarland & Co., Glasgow, the cost of erection being about $1,750. The structure is 18x12 feet, and about ten feet high.

Public Lavatory Recently Built at Vancouver.

RAPID GAS WATER HEATER.

A gas water heater constructed on new lines and described in a circular issued by the Bowman Gas Range Mfg. Co., Toronto, is called "The Rapid Gas Water Heater." It is claimed to be the most economical water heater on the market. The body is made of blue steel lined with heavy asbestos, with cast iron top and base. The burner is a powerful one. The coil contains 15 feet of copper tubing and is formed so that the lower coils are in direct contact with heat from the burner. When used with manufactured gas a fumes pipe is not necessary as there is no odor. The lower connection fastened to the body does away with the necessity of adding a stand to hold the heater.

POOR WORK AT WINNIPEG.

The Winnipeg Trades and Labor Council has passed resolutions favoring the adoption of improved plumbing by-laws, and also favoring the licensing of master plumbers. It was agreed that such a course would be to the interest of the trade, both from the point of view of the union and the public at large, for the latter would benefit greatly from the improvement in the work. It was pointed out that while it might be impossible to dictate as to who should own or control a plumbing business, there should be some legislation whereby either the owner of the business or his manager would become responsible for mistakes which might endanger human lives.

A. W. Puttee, ex-M.P., stated the existing by-law was not only faulty, but it was not lived up to, instancing one glaring case in point. Some time ago a large block was constructed in which the plumbing did not come up to the requirements of the by-law. By some means or other the owner or contractor had succeeded in getting his plumbing passed, though it was known to be faulty. Other master plumbers had taken advantage of this opening with the result that the particular piece of work had now become the standard, for the city could not enforce the by-law against one and let it pass with another.

Over a year ago there had been an agitation over an improved plumbing by-law and several months were spent in the work of investigation and collection of data. A committee from the Trades and Labor Council had given their assistance to the members of the market, license and health committee, and from all of the facts gathered had drafted a by-law which was thought to fill all requirements. The city council had dragged the matter on for months and had finally dropped it, the draft by-law being lost somewhere at the city hall. The recent strike among the plumbers had resulted in a great many second-class men being brought into the city, and to these could be laid a large proportion of the poor work which had been done of late. Mr. Puttee claimed it was a common practice in some shops to lay off the good men in the slack season and only keep the helpers and cheap men.

HEATING THE SCHOOLS.

The fitters of the Vanstone Heating Company are rushing forward the work on the instalation of the new heating apparatus at the Central and High Schools, New Westminster, B.C. The costly steam plant was installed during the summer, but up to now the buildings have still been dependent on the now inadequate furnaces.

COLLECTED CASH IN ADVANCE.

A couple of weeks ago a man dropped into George Cooper's plumbing shop on Church street, Toronto, and asked him how much it would cost to have a range boiler installed. George, who is secretary of the Toronto Master Plumbers' Association, gave him the regular price, but the customer said he already had the boiler.

"Where did you get it?" asked George.

"I bought it at Eaton's. They sell them for $4.25," was the reply.

"Did you pay cash for the boiler?" queried the secretary.

"Why, of course?" answered the customer.

"Well," said George, "I'll instal it for you, but you'll have to pay me cash in advance too."

The bargain hunter agreed and paid on the spot.

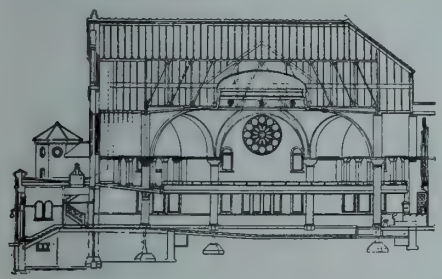
How many master plumbers collect for work before it is done? Hasn't Mr. Cooper set an example worthy of being generally followed?

The new houses that have been put up the past year in St. Thomas, had specifications covering up-to-date plumbing and heating systems.

Heating St. Andrew's Church, Montreal

Indirect Gravity System Supplemented by Fan—System Designed by W. M. Mackay, New York, a Former Canadian, and Described in the Metal Worker.

An unusually interesting system of heating and ventilation has been installed in St. Andrew's Church, in Westmount, Montreal, located at Cote St. Antoine Road and Station Street. It is notable for its simplicity and for an arrangement which obviates the heat losses which might have been entailed if the original layout of the system had prevailed. As now provided the system includes indirect steam radiation capable of warming the building in severe weather with gravity circulation, but augmented by a centrifugal fan, which insures a positive flow of air at times when the ventilation is paramount or when quick warming may be desired. The outflow of the air from the building is provided for by an arrangement of small air passages under the floor of the auditorium, these passages serving numerous small registers in the auditorium floor and communicating with a large duct, which discharges



Side Elevation of Building.

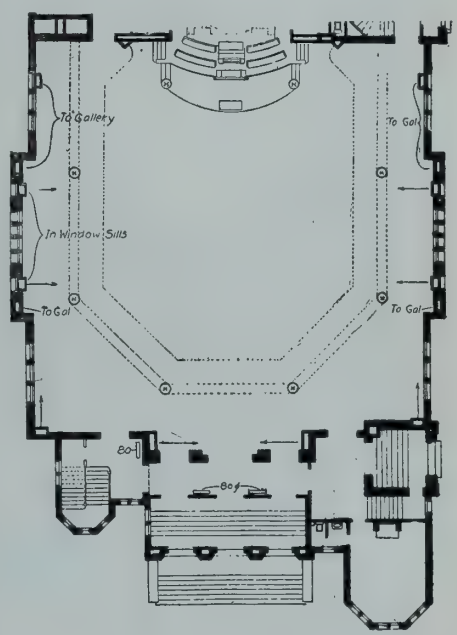
into a vent shaft warmed to a greater or less extent by an adjoining smoke flue. When the church is unoccupied an internal circulation of air may be set up, openings towards the rear part of the auditorium in the floor communicating with passages below and allowing the air to recirculate through the indirect radiation, with or without the fan in operation.

The general proportions of the building and the requirements of the heating system are indicated in the accompanying drawings and the photograph of the exterior. It will be noted that the drawings include two different plans of the heating layout, one being the scheme as originally suggested and the other being the arrangement of the heating and ventilating engineer, W. M. Mackay, New York City. The church was erected from plans of Hutchison & Wood, Montreal, and the heating and ventilating plant was installed by Alexander Mackay & Co., Dorchester and St. Mathew Streets, Montreal. The plant has been in operation for a few months, and has been found to operate satisfactorily from the standpoint of both economy and capacity.

The basement or cellar is unexcavated, and it was early decided to run air passages of masonry construction in excavations made for the purpose along the two side walls and along the front wall of the unexcavated part. The original layout, however, comprehended the use of a fan at all times drawing air over indirect coils and driving the warm air through the subterranean passages and thence to different flues for distribution of the air to the desired points in the auditorium. The carriage of warm air through a masonry passage surrounded by earth would naturally mean the loss of heat into the ground, as the apparatus will only be used one day each week; so Mr. Mackay, on being called in to the work, determined on having all the heating surfaces at the base of the different flues and employing the subterranean passage for conducting the cold air only. While the use of the fan was maintained, it was kept as a means of insuring a high degree of ventilation in mild weather and in summer, as well as in severe winter weather, leaving the plant to work in severe times as a gravity job, which would not be possible under the original arrangement, with the heating surface outside of the fan.

The temperature of the earth underneath the church will naturally be considerably higher than the average winter air temperature, so that the present scheme has the additional advantage that the air is warmed partially from a source which means no expense from the standpoint of the coal pile. Further, as will be noted, the steam and return mains for supplying the different indirect stacks are carried within the air passages, and they are not covered, but are depended on in part to temper the air before it reaches the stacks. The piping being radiating surface of no mean capacity, as well as conduits for carrying steam to the indirect radiation, are unusually large when viewed from the requirements of the indirect stacks alone.

The original design called for a tubular boiler which in part was to supply the steam necessary to drive a steam engine connected with the blowing fan, and a pump for the return of the water; instead of this arrangement, which might involve the services of a more carefully trained man than would otherwise be necessary, a sectional cast iron steam heating boiler was installed, the driving of the fan is accomplished by the use of an electric motor, and the condensation is returned by gravity. In the case of the first layout it was expected that the entrance could be sufficiently warmed by the plenum air supply, while in the plant as installed no

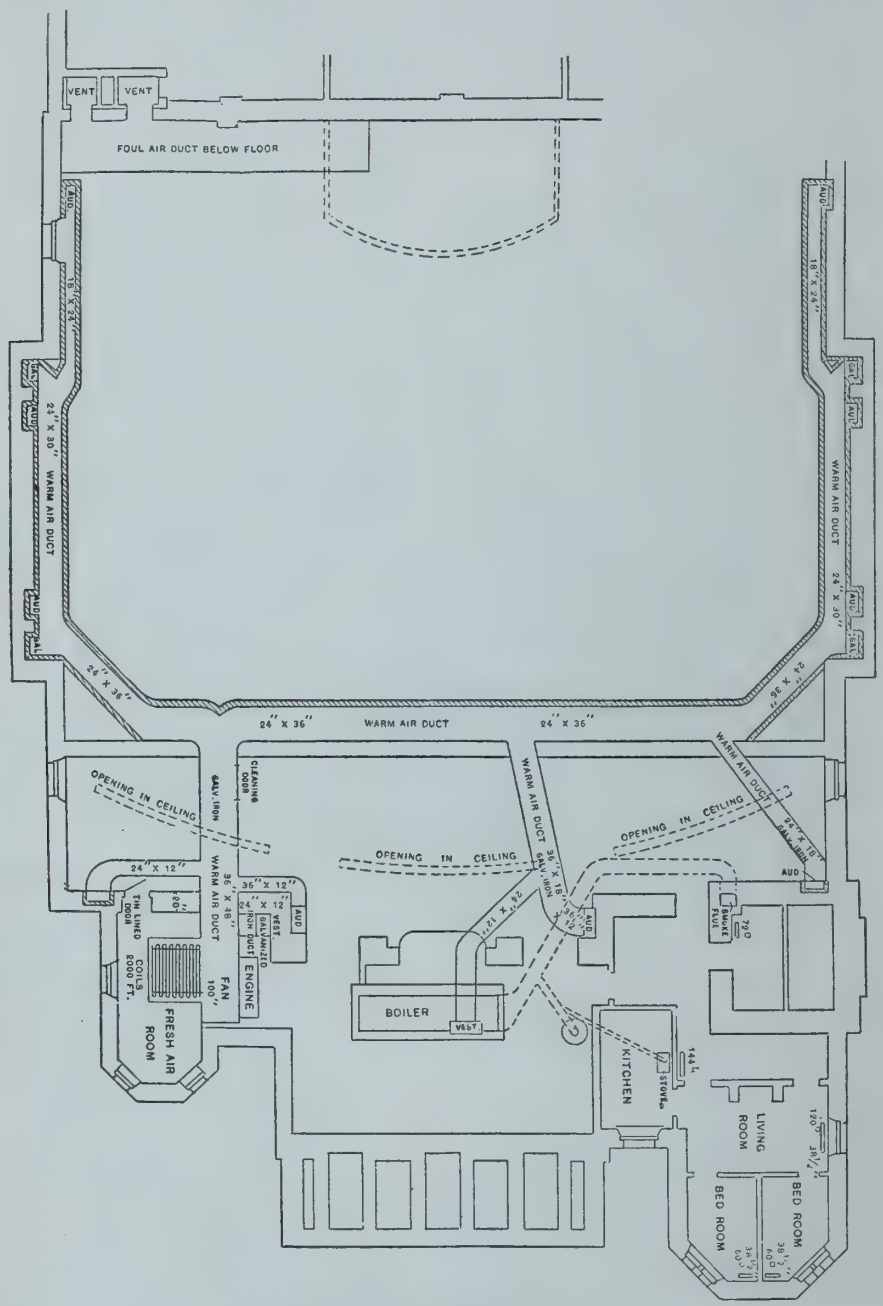


Plan of Church, Showing Gallery.

dependence is placed on having the warm air within the auditorium work to offset any chilling blasts coming through the entrance; instead direct radiation is furnished sufficiently large in amount to heat the entrance and thus prevent any cooling of the auditorium when the air is unavoidably forced in on the opening of doors.

For purposes of ready calculation, it is assumed that the front wall of the church, on account of the entrance portico and towers, particularly in view of the use of direct radiation in the entrance, is not subjected to the severe outside temperature, but, instead, that the transmission of heat is about half

what it would be if it were directly exposed. The two side walls, however, are direct exposed walls, and an estimate is also made of the heat loss through the ceiling of the church. Roughly, the church auditorium is about 86x88 ft. in plan, with a mean height of about 34 ft. There is no transmission through the rear wall of the church, as on the other side of it is the Sunday school building, warmed by a separate hot water installation. Each side wall and the front wall has an area of about 3,000 sq. ft. The plant is designed to operate when it is 10 degrees below zero, so that the range of temperature to which the wall is subjected is 80 degrees, and consequently instead of 85 heat units per hour per square foot of glass, the transmission through the glass is about 80 divided by 70 multiplied by 85 equals 97 b.t.u. per hour. Considering the walls as averaging 16 in. in thickness, the heat transmission through the wall proper is about 22 b.t.u. About one-seventh of the entire wall surface is glass, so that the loss of heat per average square foot of the exposed wall surface is 1-7 multiplied by 97 plus 6-7 multiplied by 22 equals 33 b.t.u. per square foot per hour. The 6,000 sq. ft. represented in the two side walls thus transmit hourly 198,000 b.t.u. At half the rate of heat transmission the front wall loses 3,000 multiplied by 17 equals 51,000 b.t.u. The ceiling may be regarded as losing about one-twentieth as much heat as if entirely of glass, so that the 7,500 sq. ft. of ceiling represents the loss of about 34,000 b.t.u. The total hourly heat loss in extremely cold weather is thus 283,000 b.t.u.



Preliminary Heating Layout.

With the indirect radiation assembled so that there is a chance for a greater amount of air to flow than desired in residence heating, in order to cater to ventilation requirements, it is safe to calculate that each square foot of indirect steam radiation warming the air from 10 degrees below zero to 110 degrees above can give off 400 heat units per square foot. Warming the required amount of air from minus 10 degrees to 70 degrees may be regarded as that chargeable to ventilation, inasmuch as it does not help to offset the transmission losses. The amount of heat represented in warming the air from 70 to 110 may, however, be regarded as that corresponding to the heat counteracting the exposed wall losses. From the time the air leaves the indirect stacks until its entrance into the auditorium there may be a loss of, say, 5 degrees, so that the air on beginning its circulation through the auditorium averages about 105 degrees. In the cooling from 105 degrees to 70, or through 35 degrees, must the heat for transmission losses be obtained. Therefore, of the 400 heat units available from each square foot of indirect stack 35-120 is available for offsetting the transmission losses, or about 117 heat units. Therefore the total number of square feet of radiation needed is equal to 283,000 divided by 117 equals 2,420 sq. ft.

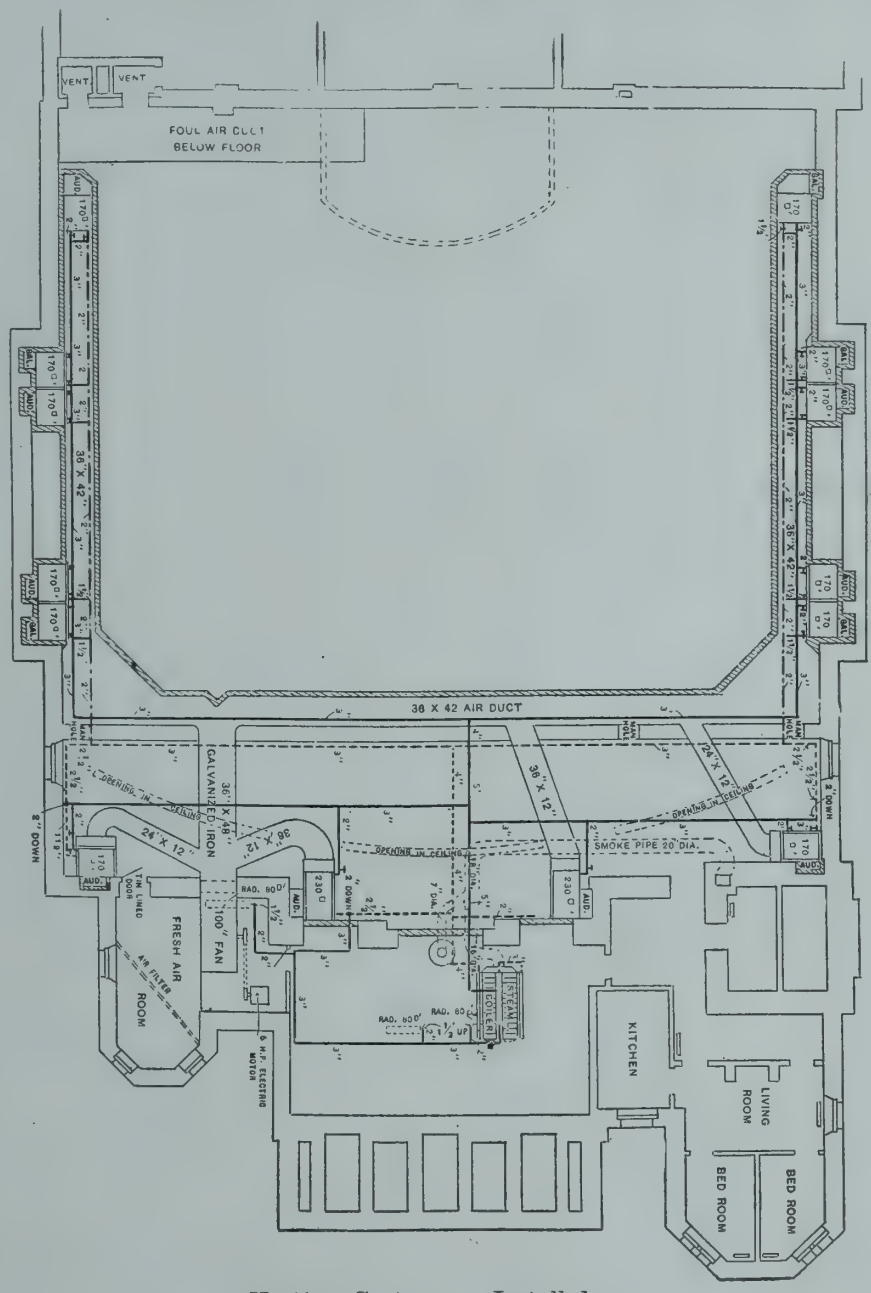
In placing the radiation we note that the two side walls show a transmission of 198,000 heat units, and the front wall about 51,000 heat units, or a total hourly transmission through the walls of 249,000 heat units. This indicates that 1 sq. ft. of indirect radiation is needed for about 100 heat units lost through the wall surface. Dividing 51,000 heat units for the front wall by 100 shows that about 510 sq. ft. should be arranged somewhere along the wall, and that about 1,980 should be divided for the two side walls, or 990 for each side wall. There has actually been provided 1,020 sq. ft. along each side against the 990 shown as necessary, but part of this is located in the corner between the side wall and the front wall, so that it can be of service in helping offset the front wall losses. For the 510 sq. ft. shown as desirable for the front wall two indirect stacks aggregating 460 sq. ft. have been provided.

It was required that the ventilation should be provided in the terms of about two changes per hour, and the fan installed is a 100-in. full housed centrifugal blower, arranged to be driven at 180 rev. per min. by a 5-h.p. electric motor. Such a fan delivering against 1 oz. pressure, having a blast

wheel 5 ft. in diameter, should deliver 9,000 cu. ft. per minute on the basis of Professor Carpenter's formula that the discharge in cubic feet per minute is equal to the product of the speed in revolutions per minute, and the third power of the diameter of the wheel in feet multiplied by 0.4. As the cubic contents of the auditorium are about 250,000 cu. ft., and the fan in 30 min. will deliver 270,000 cu. ft., it is seen that the ventilation specification is lived up to. The amount of air that the indirect radiation can deliver in zero weather working without the fan may be ascertained approximately as follows:—Each square foot giving off 400 b.t.u., the 2,500 should give off 1,000 b.t.u. per hour. As the air is warmed 120 degrees, and 1 b.t.u. will warm 55 cu. ft. 1 degree, the amount of air which the radiation can warm is equal to 55-120 of 1,000,000, or 458,000 cu. ft., which, it will be seen, is very nearly in the ratio of two changes per hour. The seating capacity of the church is about 1,250.

The discharge from the fan is of galvanized iron. From the fan to the adjacent wall of the fan and air chamber is a short length of the galvanized duct, and here an ingenious scheme is employed to minimize any chances of the dissemination through the building of noise from the fan. The wall is about 20 in. thick and the galvanized connection is carried into the opening about 5 in. The opening in the wall is divergent, or gradually opening in the direction of air flow, and the continuation of the galvanized work leading to the brick air duct beyond starts about 5 in. inside the other face of the wall, so there is a break in the metallic air passage within the wall of, perhaps 10 in. This measure is calculated to prevent the transmission of any vibration. The galvanized iron connections from the subterranean conduit for the indirect stacks located against the front wall are indicated in the drawings. Outside of these two stacks all of the indirect stacks are located directly in the brick air conduit, six on each side. Three of these supply air to the auditorium floor and the remaining three on each side supply the gallery. The chambers containing radiators for the main floor supply are provided with switch dampers, so that the air can be by-passed in the case of these stacks and either warm, mixed, or cold air can be delivered through the flues. The dampers are operated by chain and pulley from above the church floor. Two of the air supply registers on each side of the main floor are located in the window sills, with a long register, about 12x36 in. in size, in each case. The third register on each side for the main floor is located in the floor, while the two on opposite sides of the entrance discharge at a level 8 ft. above the floor. The registers for the supply to the gallery are located at points 8 ft. above the gallery level.

Most of the ground floor extends over the unexcavated portion of the basement, and there is an arrangement of air passages formed by 3x3 in. scantling, so as to carry the air from openings in the pews to a duct toward the rear of the church which discharges into a vent shaft. There are also air vent openings in the rise to the platform of the pulpit, these register openings communicating with the main vent duct and leading to a second vent shaft. Besides depending on the warm air within these vent shafts for securing the desired upward draft to the outside atmosphere, which draft is of course augmented when a slight plenum is maintained with the fan in operation, there is alongside the vent shafts a smoke flue from the heating apparatus of the adjoining Sunday school building, and the heat thereby available is utilized toward accelerating the draft. The openings into the vent shaft at the rear of the church are provided with galvanized iron dampers, which can be opened and shut from the basement in the front part of the church, wire ropes being carried from the rear to the front of the building through one of the large air ducts.



Heating System as Installed.

To provide for the internal circulation of the air when the church is unoccupied and when the only requirement is heating, so that it is unnecessary to have a continual flow of fresh air passing through the building, there are three boxes on the floor of the church below the rear circle of pews, as indi-

cated in the basement plan. The opening into the boxes from the church is along one side and is protected with wire gratings, and the floor below these boxes is cut open so as to allow a flow of air from the church to the basement. The inside air can then be drawn from the church to the fan chamber and thence conducted into the subterranean air passages to be warmed and discharged into the auditorium, or it can be led directly into the subterranean air passages. There is also provision for a circulation of air between the space below the gallery and that above it, six openings each, with a register 20 x 18 in. in size being provided in the gallery floor.

The steam is generated in a Mount Royal sectional boiler, with a rated capacity to carry 5,750 sq. ft. of direct radiating surface. This boiler, which was built by the Mackay Mfg. Company, New York, supplies a 5-in. main for the indirect stacks and a second for the three direct steam radiators shown in the plan of the church. Alongside of it is a hot water boiler for heating the janitor's quarters and the minister's study, located in the front part of the church. The run on the mains is indicated, and, as stated, it will be noted that they are carried large in size, because there will be considerable condensation in them before the steam can reach the indirect stacks. The supply to the stacks is all 2 in. in diameter, with 2 in. return from the stacks having 230 sq. ft. of surface, and 1½ in. return from the rest. The indirect radiation is Manhattan pin radiation, made by the Mackay Mfg. Company. A cheesecloth filter is used for filtering the air before it reaches the fan. The flues which have been provided in the building construction are 12 x 24 in., both for main floor registers and for the gallery registers.

Pilot Lights on Gas Water Heaters Prohibited

Written for Plumber and Steamfitter by J. L. Brady, Washington, D.C.

In the Plumber and Steamfitter of January 1 the writer gave a short account of the investigation of the U.S. Department of Agriculture as to the generation of carbon monoxide gas by the mixture of air and gas in gas water heaters—the heater upon which experiments had been made being one from which carbon monoxide fumes killed three persons in one family in this city.

A further investigation was made as to the composition of the gas supplied by the local gas company, resulting in the statement that the gas contained from 20 to 30 per cent. of the deadly carbon monoxide. This report was referred to the President of the United States, who transmitted it with other data to the National Congress for legislation towards prohibiting the manufacture or distribution of gas containing more than a limited amount of this gas. It is too early yet to state what Congress will legislate, but pending congressional action, the commissioners of the District of Columbia have issued the following order pertaining to the construction, instalation and inspection of gas water heaters:—

All gas water heaters shall be provided with a door through which the gas burner and all of the heating surface shall be exposed for the purpose of lighting and cleaning, and said heaters shall be provided with a flue pipe to carry off the noxious odors emanating therefrom, to the outer air.

The use of pilot lights on water heaters is absolutely prohibited, except for large water heaters automatically operated by thermostat.

The shuttle on the mixing valve shall be so constructed as to prevent the possibility of disarrangement due to carelessness, expansion or contraction, yet be accessible and easily controlled.

The heater shall not be set closer to the floor than 2' 6", measuring from the top of the burner.

When complaint is made of existing gas water heaters they shall be made to conform to the above requirements or be replaced with heaters of approved type.

It has not come to the notice of the writer of any city requiring heaters of the construction demanded by this recent order, yet it certainly seems expedient that every city in the country should look to the welfare of their citizens in this respect. There are undoubtedly cities where local or State law prohibits any person or firm from manufacturing or distributing water gas or a gas product containing more than a limited (unharmful) amount of the deadly carbon monoxide, but there are also almost numberless communities where this precaution is not taken and where it is most probable many cases of asphyxiation could be directly traceable to this composition in the local gas supply.

Is it not, therefore, time for some uniformity to be established in the construction of apparatus and of plumbing material generally? The American Society of Inspectors of Plumbing and Sanitary Engineers has this as one of its objects of organization, and what it has accomplished during the past year will, of course, be made known by the reports of its several committees at the annual meeting in Omaha, Nebraska, February 8, 9 and 10, 1909. Creating uniformity in laws and construction of materials takes much time and lots of hard work on the part of those public spirited persons who are endeavoring to bring about the most sanitary and safe construction possible. And it is only with the working energies of the numerous forces coupled together that conditions are bettered: therefore, let every city where this item might reach take notice of the construction of the gas water heaters which are being installed every day in their homes, and to the bettering of the construction, applying if possible the needed changes for the safety of their citizens.

The order issued by the district authorities certainly seem to have the marks of safety, because in order to light the gas in the heater of such construction it is absolutely necessary that the door be opened so that the lighting part can be reached.

I do not overlook the fact that many of the cases of accidents are caused by gross carelessness—for instance, with the heater having the pilot light on the outside, a person may turn on the pilot, strike the match with which to light it, and the head of the match may break, but the light go out. Without turning off the gas he or she goes for another match, strikes it and touches the light to the pilot of the heater and bang—there is an explosion caused by the rapid accumulation of gas in the heater while the person is getting the second match lighted.

If the heater had no pilot the door would have been opened and the gas would have escaped into the room and been quickly noticed.

The same applies to gas ranges with the pilot on the outside. Where the pilot light is not immediately lighted the oven is filled with the gas and the explosion occurs in the same manner as mentioned above. This shows the necessity of always having the door of the oven open.

And so I say, let the example of the Washington authorities be taken up and followed by those in other cities who have charge of such matters, and let them look to the instalation of gas heaters of safe construction, that the repetition of the triple tragedy in this city may not happen elsewhere.

Joseph Rodgers & Son, Hamilton, have the plumbing contract for the new collegiate institute building there, which will run between $4,000 and $5,000.

Preliminary Treatment of Sewage

Extracts From the Recent Report of the Royal Commission Appointed by the British Government on Methods of Treating and Disposing of Sewage.

(Continued from Jan. 15 issue.)

If a septic tank is cleaned out completely, some weeks may pass before the fermentation of the sludge is in full progress again. It was found, at Birmingham, that, if some of the sludge is left in a septic tank at the time of cleaning, fermentation is hastened when the tank is re-started. At Rochdale, S. S. Platt has shown that the same effect can be produced by filling a clean and empty tank with septic liquor (from another tank) before any fresh sewage is allowed to pass into it.

Where sludge is removed from septic tanks at long intervals of time, and especially where it is disposed of by burial in the ground, it is of great importance to carry out the operation in dry weather. The success of the plan of disposing of the sludge by burial in the ground depends very largely upon the rapidity with which the sludge can be covered over in the trenches, and this is governed by the state of the ground and the atmospheric conditions prevailing at the time.

Rate of Flow Through Tank

For the reasons already given we consider that the main objects in passing sewage through septic tanks must be looked upon as being :

1. The settlement of the suspended matter in the sewage ;
2. The digestion of as much sludge as possible ; and
3. The equalization of the sewage as regards strength.

The most advantageous rate of flow, therefore, is that which gives the maximum settlement and the maximum digestion of sludge, without producing any serious nuisance from smell. It is impossible, however, to lay down any given rate or rates of flow through septic tanks for all sewages, for the following reasons :—

The suspended matter in sewage differs as regards ease of settlement and rate of fermentability at different places. The suspended matter in a strong slopwater sewage, for instance, settles more easily and takes longer to putrefy than the suspended matter in a strong domestic sewage derived from waterclosets.

The degree of settlement depends also upon the form of tank adopted. The passing of a sewage through a Dortmund tank; for instance, would no doubt give better settlement than would be the case if a plain rectangular tank were used, but there would probably be less digestion of the sludge.

The qualities necessary in the septic tank liquor may vary at different places. At one place where setic liquor was to be treated upon percolating filters of coarse material, a larger quantity of suspended matter might be allowed to pass away in the liquor, without danger to the filters, than at another place where the liquor was to be treated upon fine-grained filters. Again, where it was of the utmost importance to have as little sludge to deal with as possible, and where the filters could be washed and re-made cheaply, the digestion of the sludge would be of greater importance than the settlement of the suspended matter; whereas, at another place where ample facilities for dealing with sludge existed and where filtering material could only be obtained at high cost, the reverse would be the case.

The question of smell arising from the septic liquor during its distribution would also assume greater or lesser importance at different places. Generally speaking, very slow passage through the tank tends to increase the risk of nuisance from smell.

In a number of cases, owing to long sewers or to the use of the of the sewers for storage, the sewage is already in what is called a "septic" condition when it reaches the sewage works.

Tank Capacity.

The rate of flow through a septic tank is consequently a matter in which the needs of each place require to be taken into account : but from general experience and a consideration of the evidence, we think it may safely be said that at few places should the sewage remain more than 24 or less than 12 hours in a septic tank. We think therefore, that the total tank capacity, excluding the stand-by tanks for storm water, should be equal to the total daily dry weather flow. In designing a sewage works where septic tanks were to be adopted, never less than two tanks should be provided, and these should be so constructed that one tank alone could be used at a time. If better settlement became necessary, it might be found that this could be effected by using the tanks in series and adding small quantities of some precipitant to the liquid as it passed into the second tank.

Colonel T. W. Harding and Mr. W. H. Harrison carried out a series of experiments at Leeds, in which flows sufficient to fill the septic tanks in 12, 24, 48, and 72 hours were compared. The results showed that at that place, and using simple rectangular tanks, a rate of flow sufficient to fill the tank once in 24 hours was the best economic rate. Rates of flow slower than this gave only slightly better results as regards suspended matter in the tank liquor, and greater rates of flow brought out more suspended matter than it was thought desirable to send on to the filters. The experiments showed also that, if the flow was increased to a rate which filled the tank in 12 hours, the tank became choked with sludge before septic action was induced.

As regards the question whether it is possible to "over septicise" a sewage, several witnesses have stated that if sewage be kept too long in the tank, the amount of sulphuretted hydrogen produced is considerably increased, and some witnesses have expressed the view that too long a stay tends to impair the subsequent oxidation of the sewage during its passage through the filters.

Should Tanks Be Closed or Open?

We are not aware that any comparative observations have been made of the relative merits of closed and open tanks in the case of a domestic sewage, but comparative experiments have been carried out at Birmingham, Burnley, Leeds, and Manchester, which show that, as regards digestion of sludge and quality of tank liquor, the closed tank possesses no advantages over the open tank.

In cases, however, where it is important to avoid nuisance from smell, our experience shows that the closed tank is generally preferable.

At Exeter, Yeovil, Andover, Hartley Wintney, and Prestolee, where the tanks are covered in, the smell from the tanks themselves is almost entirely done away with.

At Accrington, Leeds, Rochdale, and Burnley, where the tanks are uncovered,

there is, as a rule, appreciable local smell.

At Sheffield, the nuisance arising from the open (experimental) septic tank was so pronounced, that the men on the works raised strong objections.

At Gosport, a very serious nuisance arose from open septic tanks, which was almost entirely done away with by completely roofing over the whole of the tanks and channels at the works.

At Guildford and Carshalton it was found necessary to put a rough covering over the tanks. In both cases the smell was largely diminished as the result.

At Ilford, a substantial roof is now being provided, to diminish the smell.

On the other hand, at Birmingham and Manchester, very little smell arises from the open septic tanks. This is no doubt accounted for by the fact that the sewages contain manufacturing waste, iron salts in the case of Birmingham, and iron salts and tarry matter in the case of Manchester.

As regards closed tanks, we may observe that a roof somewhat hampers sludging operations, and further, that care is necessary to avoid explosion of the gas which accumulates under the roof. Serious accidents have been caused by the explosion of the gas in closed septic tanks.

MONSTER BATH FOR PRESIDENT.

When President-elect Taft makes his coming voyage to Panama he will be able to bathe comfortably on the battleship North Carolina, the J. L. Mott Co., New York, having supplied a monster tub seven feet one inch long and three feet five inches wide. It weighs a ton, and is fifty per cent. larger than the usual large sizes. Four men can comfortably seat themselves in the tub.

A case has lately been decided by the New York Supreme Court of interest to heating contractors.

It appears that during the winter of 1907-8 a certain contractor agreed to heat a business building in New York State from a boiler located in an adjoining building. According to the owner the service was not satisfactory, and he placed a boiler in his own building and refused to pay the bill, alleging $500 damages for loss of tenants.

The court decided that the building had been heated according to contract and decided the case in favor of the contractor.

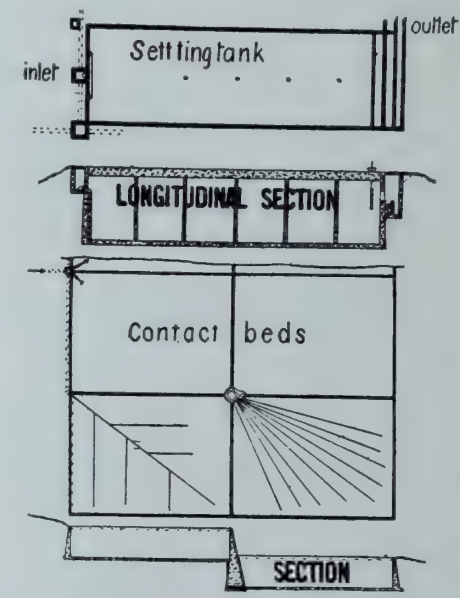
The Vancouver Horse Show Association have been granted a permit for a $45,000 structure.

Sewage Disposal System for a Small Town

Prof. H. N. Ogden in Domestic Engineering.

Balston Spa is a town of about 6,000 people situated on the Kayaderosseras creek about four miles from Saratoga lake. The domestic sewage for purposes of the design was estimated at 500,000 gallons, in addition to which 400,000 gallons of tannery wastes entered the sewers, possible filtration bringing the total estimated daily flow of sewage up to 1,000,000 gallons per day. The plant is of particular interest from the fact that nearly one-half of the daily flow of factory waste is of a kind usually considered difficult to handle.

The sewage is delivered from the village to a receiving tank on the outskirts, the capacity of the tank being one-quarter of the day's flow. It is 70 feet in diameter, 9 feet deep and divided into two equal compartments by a concrete wall extending from floor to roof. In this way either one or both compartments may be used at will. The suction pump is built on the side of a circular well and is 12 by 24 feet and 8 feet deep. A single-action plunger pump forces the sewage from this well to the settling tanks, which are 2,700 feet away and on the top of a hill about ten feet higher. The settling tanks are three in number, so arranged that they may be operated singly, in sets of two, or all at the same time. Each tank is 111 feet long, 35 feet wide and averages 7½ feet deep, containing 218,000 gallons.



System at Balston Spa, N.Y.

Tanks Can Be Operated Singly.

The pump well, holding sewage about three hours, delivers the sewage to these tanks already partially septicized, and with only one of the tanks in action an eight-hour period is obtained, and with the three tanks in operation a detention period of not far from twenty-four hours can be counted on. The force main enters a concrete manhole at the tanks and from there is led by a twelve-inch pipe into the tanks, two openings being provided for each tank. No baffle walks are provided at the inlet end, but a movable baffle wall operated by screws is provided about four feet from the outlet end. Each tank is provided with a twelve-inch sludge valve and sludge pipe connection, opening out onto sludge tanks behind the tank. The outlet weir is of stone, eighteen inches wide and two inches thick, built into the end concrete wall with a slope of one inch outward. Just behind this outlet weir and following the outlet channel, which is two feet wide and two deep, is a deposit of coke breeze filter. This coke bed is intended to arrest the progress of particles in suspension which pass out from the settling tanks, and to that extent protect the contact beds from clogging. It is also stated that this coke bed will act as an aerator and start the exudation of the effluent.

From the settling tanks the sewage passes to the contact beds, of which there are four primary and four secondary. The effluent from the tanks flows directly to the gate chamber of the contact beds through a twelve-inch vitrified pipe sewer. The gate chamber is four feet square and has four bronze mounted valve gates which control the flow of sewage to the four primary contact beds. These beds are each 120 feet wide and 6 feet deep. The contact material is broken field stone of a hard and crystalline character like granite and very uniform. The depth of this material is five and one-half feet. The under-drainage of the beds is secured by a series of nine lines of five-inch horseshoe tile underdrains laid on the concrete floor and radiating towards the centre, at which is the gatehouse. The gates of the valves, which control the emptying of the primary beds as well as the emptying and filling of the secondary beds, operate by hand. There is a float gauge with an indicator in the gatehouse which shows the level of the sewage in the bed. A twelve-inch gate valve opens and shuts to control the flow from the beds. It is estimated that each bed will hold 130,000 gallons of sewage independent of the contact material.

With Our Correspondents

The Editor does not hold himself responsible for the opinion of correspondents. Short, crisp letters will be appreciated. To insure publication, the name and address of the writer must accompany the communication, not necessary for publication. Sketches of work or methods will receive our earnest attention. These columns are open to our readers at all times without charge, and any questions or experiences will be given proper space.—Editor.

RANGE BOILER CONNECTIONS.

Will you kindly advise me of the best way to connect a horizontal range boiler, without coil, with cold water supply, piped from the tank, the range boiler being also connected with the two water fronts of a twin range? I send a rough diagram of the essentials. The boiler is 52 gallons capacity, with six 1-inch tappings. Also let me know to what extent an upright would be better than a horizontal.

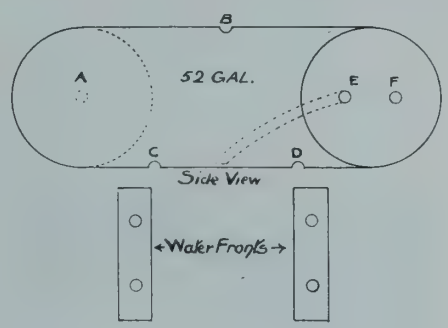
Suppose we brought the supply in at e, leading by a curved tube to bottom of boiler, took our supplies to water fronts from c and d, brought our flows from water fronts to a and f, and our flow from boiler from b, what relative disadvantages would there be other than the curved tube?

Thanking you for an early reply, as we have just received a boiler somewhat different to what is in use in Boston.

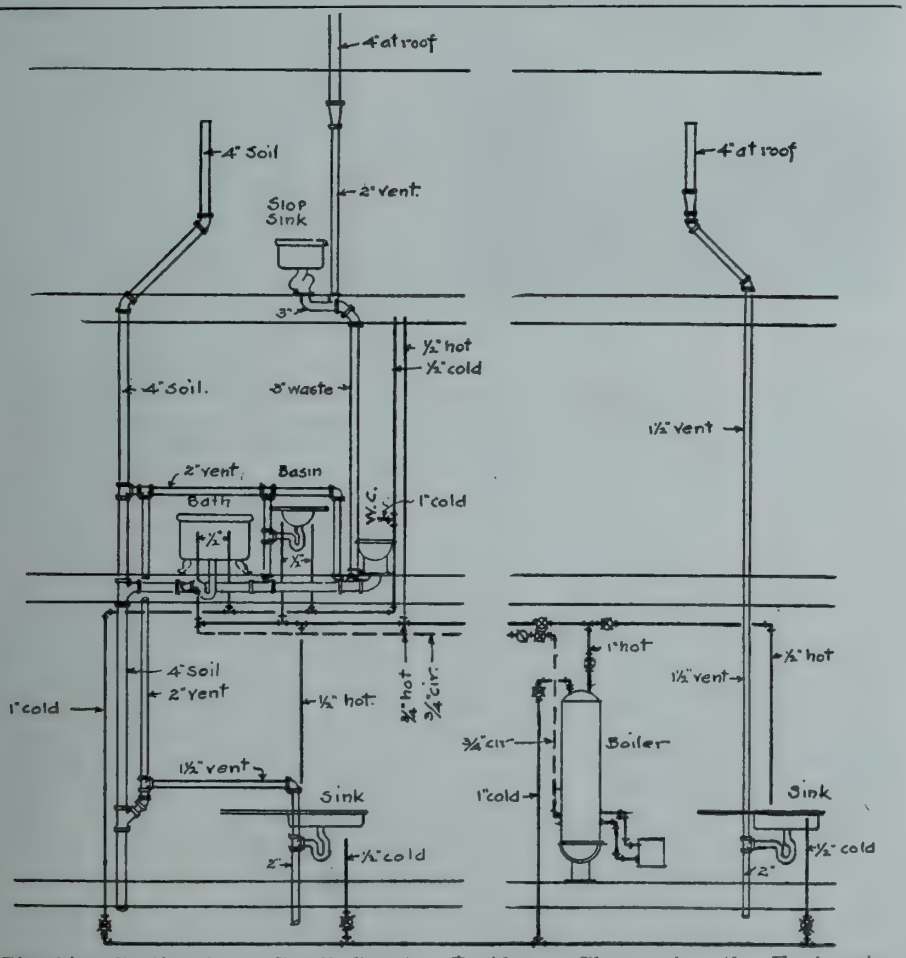
W.J.W.

Summerside, P.E.I.

There could be no objection to the connections as shown by our correspondent. The connections could also have been made by joining both the flow pipes, and both the return pipes between the water fronts and the boiler into common flow and returns, and so have reduced the connections or tappings at the boiler. We do not know just what are the capacities of the water fronts, but it would seem that a 52-gallon boiler is rather small for use on a 2 fire room range.



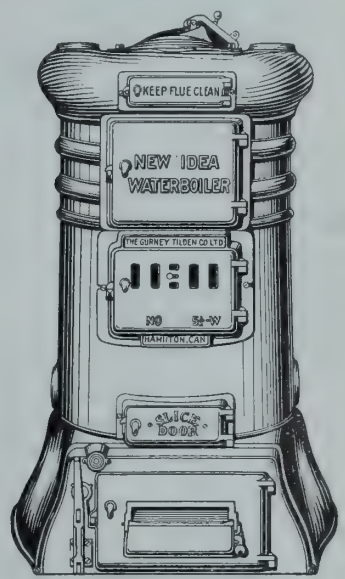
Draw off stops should be provided at the lowest point in the circulation pipes so that any accumulation of sediment can be easily cleared from the pipes.



Plumbing Section for a Small Country Residence Shown in the Engineering Review.

"NEW IDEA" BOILERS.

The Gurney-Tilden Co., Hamilton, who have been making radiators for many years have now added to their line the "New Idea" boilers, for which they claim a sensitive quality due to the narrow waterways, this overcomes the sluggish circulation and low absorbing power found in boilers with thick waterways. One of the chief aims in the construction of the "New Idea" is to secure the best results with the greatest economy of fuel, and to this end the fire-pot is designed to hold fuel sufficient to give good service for eight hours in zero weather. The sides of the fire-pot are corrugated, thus increasing the heating service and providing air space. The trimmings are of the latest design and the grate is the latest rocking and dumping pattern. The boilers are made on distinct and separate models for steam and hot water, and the fuel used may be hard or soft coal, gas or wood. Some of the boilers are built on sectional lines, thus allowing battery sets to be erected for heating large public or private buildings. Some useful illustrated literature descriptive of the various styles and grades is being circulated by the company.



Ashbury College, Ottawa, will be rebuilt on a new location this year.

NEWS OF THE TRADE IN CANADA

Gingras & Nadeau, plumbers, Levis, have dissolved.

MacNabb & McKinney, plumbers, Parry Sound, have assigned.

Robert Ross, Leamington, has received the contract for the plumbing in the new Leamington post office.

A proposition to establish a gas plant is to be put before the Fort William council by Hedley Cuthbertson.

J. N. Tallman & Sons, brass founders, Hamilton, have changed the firm name to the Tallman Brass & Metal Co.

A very handsome display, showing a cosy grate fire, in the window of Hall's plumbing shop, Kingston, has been much admired.

Adam Clark & Son, Hamilton, have the contract for the plumbing in the new East End fire station, amounting to about $1,000.

Richard Gas, Saskatoon, has been appointed by the Public School Board to superintend the heating system in the Alexandra School at that place.

G. G. Taylor's office and sample room, Saskatoon, containing plumbing goods, was damaged by fire early on Wednesday morning, January 20.

The Standard Plumbing & Heating Co., Winnipeg, sustained some loss during a fire recently, though the insurance will cover and replace the damage done.

Cluff Brothers, Toronto, have discontinued jobbing soil pipe and are centralizing their efforts upon heating, ventilating and domestic water supply lines.

The Warden King Co., Montreal, have issued a neat calendar showing a fine view of the company's magnificent new plant at Montreal. The works are shown in white on a black background.

As a relic of the cold snap Vancouver had six inches of snow and several hundred water services frozen. About 500 were frozen altogether, and plumbers and city pipe men were kept busy night and day.

H. J. Griffiths, who has conducted a plumbing business in Welland for the past two years, left town recently, and there are a number of anxious enquirers. His wife left the same day, but by another train.

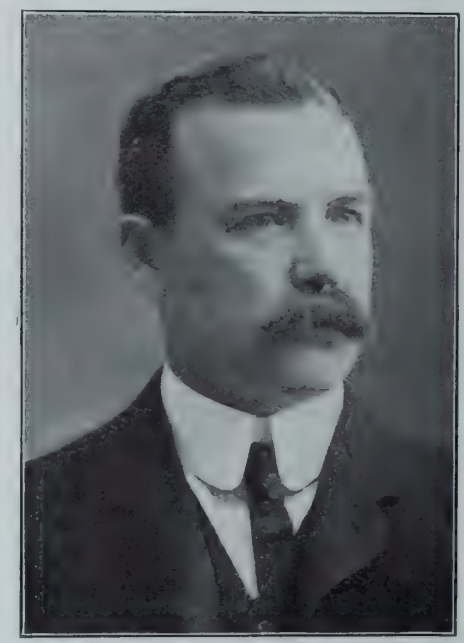
Several of the plumbers from Bennett & Sons plumbing department, Gananoque, have just returned from Kingston, where they completed the heating, plumbing and gas fitting in two fine new residences being erected there.

The James Smart Co., Brockville, supplied a new heating system to the School Board, for which they asked payment, but have been held back on account of the weather not having been severe enough to thoroughly test it yet.

Charles W. Webb, for several years with the Kemp Manufacturing Co., Montreal, has succeeded Louis A. Payette as sales manager of Warden King, Montreal. Mr. Webb has had a long experience as salesman and knows Canada from coast to coast.

J. M. Perry, of the Forest Brass Works, Chatham, contemplates increasing the capital of the concern by turning it into a joint stock company. He has received orders which necessitate enlarging the capacity of the present factory. The concern now has a free building and a ten-year tax exemption.

Ald. Robert Eliott, of Eliott Bros., hardware dealers and plumbers, Kingston, has been honored this year with the chairmanship of the Light, Heat and Power Committee. He is a practical man and should surely make good.



ALD. ROBERT ELLIOTT, KINGSTON.
A Plumber who has been Elected an Alderman Seventeen Times.

At a recent meeting of the Montreal branch, No. 144, of the United Association of Journeymen Plumbers, Gas and Steam Fitters, an illustrated talk on the principal uses and special applications of the Bundy steam trap was given by H. L. Peiler. A discussion followed.

The James Ballantyne Company's plumbing premises at Wall Street and Richards Avenue, Winnipeg, were destroyed by fire a fortnight ago. The company is now in need of catalogues of plumbing and heating goods, and manufacturers and jobbers are asked to forward such literature as soon as possible.

The Pacific Coast Pipe Co. is turning out a 12-inch wood stave pipe for a main eleven miles long, to be installed for the City of Nanaimo, on Vancouver Island. This main is to provide a new supply of water for the city waterworks, the source from which the water is being taken being the South Fork of the Nanaimo River. The new supply main will discharge into the present reservoir system of that city. The cost is estimated at $80,000.

The International Heating & Lighting Co., Strathcona, were unable to meet the demand of the Edmonton city council for an Alberta guaranteed bond of $10,000 before midnight on December 31st, hence their franchise in that city is forfeited unless the new council will grant the extension. It is probable that the matter will have to be submitted to the ratepayers of Edmonton again.

A scheme is being discussed in Leamington for the heating of all the business portion of the town with the exhaust steam from the electric light plant, as is now done in Chatham by the Chatham Steam Heating Company. The scheme is being received with favor, the town being so compact and the lighting plant so near its center as to render the laying of the mains a minor matter.

During this season M. Isbister & Son, Saskatoon, have installed twenty-five "Economy" hot air furnaces in various residences and buildings throughout the city. Two big contracts completed by the same firm were the sheet iron and cornice work on the city hospital and the post office. On the latter building a copper cornice was placed. Plumbing fixtures were installed in the residences of W. J. Robertson and Mr. Drew, the Royal Hotel, and the C.P.R. bunk house at Sutherland.

A plumber named Royal was suffocated in a fire started by the explosion of his gasoline torch while working on the water tank under the roof of the Cote des Neiges College at Montreal. One of the brothers heard cries for help, and going to investigate found smoke pouring out of the roof where Royal was working. The firemen were summoned and the fire was extinguished by a Babcock machine, but it was twenty minutes before the body of the man, who was known to be inside, could be reached. It was then found he was dead.

Regina may reconsider the scheme prepared by Engineers Lea and Smith, which looked to the septic tank to purify the city's sewage before emptying into the Wascana. It is understood that the general question of the pollution of streams will before long receive attention at the hands of the Saskatchewan provincial government. It is contended that while the Government

might very properly insist upon a certain standard of purification before sewage was emptied into a river, it will hardly favor the total prohibition of such methods of sewage disposal.

Plumbing Inspector Townley of Vancouver pointed out that many of the "freeze-ups" during the recent cold spell were in the outside "stacks" or runaways from the bathrooms. These freeze-ups are due to the fact that people think they can keep their water pipes from freezing by letting a tap run. Generally the tap chosen for the purpose is the bathroom tap. It is allowed to trickle all day long and in the course of a day or so the outside pipe is choked with ice, the slowly trickling water freezing as it goes down a little at a time, till the whole inside of the pipe is a big icicle, and then, in the majority of cases, it bursts.

The Western Plumbing and Heating Co., Saskatoon, have taken up their quarters in the new cement block erected by them on 20th street west. The building is two storeys, with a basement where goods will be stored. The ground floor is utilized by the offices, show-room and workshop. The firm reports business very good. The new quarters give them much more room for the display of goods and a bigger business may be looked for. The first floor of the building has been divided into suites of rooms, which the company will rent. The first floor is now being finished by the contractor. The building is heated by steam.

SASKATOON'S NEW HOSPITAL

The new $55,000 municipal hospital at Saskatoon is all but completed. The contractors were the J. McDiarmid Co., of Winnipeg, and the architect, W. W. LaChance of Saskatoon. The steam heating and ventilating systems, the plumbing fixtures, the cornice work and the sheet metal work was done by M. Isbister & Son, of this city. Two No. 200 Pease "Economy" steam heaters and ventilators were installed. Altogether there are 114 radiators in the building. Some of these are fixed overhead where it has been found inconvenient to place them on the floor. Behind the steam heaters an electric motor and fan are placed, which will be connected with the city power plant. From the fan fresh air will be driven through the heating plant and will be conducted to each room in the building through a large galvanized iron trunk in the corridor of the basement. From the large duct smaller pipes will supply each ward with warm air in the winter months and cool air in the summer. The air, on its way up, passes through a charcoal basket, thus purifying it before entering the rooms. Each room is also supplied with a foul air vent which passes to trunk pipes in the attics and thence through the roof. The four public wards are equipped with three sets of fresh and foul air vents. Floor registers are used in the winter and wall registers in the summer. There are six bath-rooms in the building and eight closets. The closets have flushometer valves connected with a water supply in the attics. The other fixtures are eight lavatories, four clinic slop sinks, four diet kitchen sinks, one butler's pantry sink and one surgeon's sink. The clinic slop sinks are equipped with foot pedals connected with the hot and cold water supply so that nurses do not have to touch the taps with their hands. There is also a jet spray for flushing bed pans, which may be operated with the foot. The Bronx combination waste and supply is used in the bath rooms. The surgeon's sink, at which instruments will be cleansed, is operated by means of a Clover knee action. The plumbing fixtures installed were supplied by J. L. Mott Co., New York. A 150-gallon boiler in the kitchen supplies some of the fixtures with hot water, while a 200-gallon boiler connected to a garbage crematory in the left wing supplies the others. In the locker room there are eight iron cage lockers where patients' clothes may be kept. A. D. McLean superintended the instalation of the heating system, the plumbing fixtures and the cornice work.

WHO'S WHO IN THE PLUMBING AND HEATING TRADE.

Adam Taylor, who was last month re-elected a vice-president of the Canadian Commercial Travelers' Association is best known to readers of the Plumber and Steamfitter as the secretary of the Taylor-Forbes Co., Guelph, makers of "Sovereign" boilers and radiators, although he is also connected with the Standard Valve and Fittings Company, who also have their factory in the Royal City.

Although not now on the road Adam never lets an opportunity slip past him to practice his salesmanship abilities. He learned to talk boilers and radiation in the same school so many good fellows have graduated from, the Dominion Radiator Co., being assistant to the general manager of that company when he and John M. Taylor, broke away to become hardware manufacturers. And making a success as manufactuerer of lawn mowers, builders' hardware, etc., the brothers four years ago erected a big foundry and got back into the heating goods business.

Adam is one of those fellows who is ever young. He started off in the race of life with the same pistol shot as John M., but when he arrived at the age which marriageable ladies call "questionable" he commenced to get young again. And now when John M. is figured around the forty mark Adam has fixed things up with Father Time to let him appear as only thirty. But history tells a different tale and records on file in the Militia Department at Ottawa show that Adam was old enough to cast aside his knee breeches and pass muster when a call for volunteers was made in 1885 to go to the Northwest to quell the rebellion headed by Louis Riel. Wearing the red coat of the Royal Grenadiers, of Toronto, he passed through several engagements

No. 2, ADAM TAYLOR, GUELPH.

winning honor for himself and helping to win deserved praise for the regiment.

May Adam always feel as young as he looks.

Building permits totalling $60,200 and including 27 dwelling houses, were issued recently in Toronto.

The recent cold spell at Vancouver had the effect of stopping building operations and work in general, and until the snow is out of the way building will necessarily be slow. Twenty-four permits were issued recently at $34,540, all for dwellings and additions.

CONTRACTS AND BUSINESS OPPORTUNITIES

Public Buildings.

A new school will be built at Rosthern, Sask.

A new high school will be erected at Dundas shortly.

A new firehall will be built on Charles St., Vancouver.

A new Roman Catholic church will be erected at Ottawa.

A new Presbyterian church will be erected at Sundury.

The by-law to establish a free library was carried at Mt. Forest.

It is stated that a movement is under way for the erection of a hospital in Hull.

The Ottawa Separate School Board propose to build two new schools this year.

An addition is proposed to be built to the present general post office at Toronto.

The Kingston post office building is to be extensively enlarged at a cost of $30,000.

Oshawa ratepayers have approved a by-law to erect a high school at a cost of $20,000.

Elora ratepayers have approved a by-law providing for the maintenance of a free library.

The Canadian Pacific Railway have donated a site for a school building at Outlook, Alta.

The School of Mining at Kingston will ask the Provincial Government to erect a building for mining mineralogy.

The ratepayers of Strathroy have approved a by-law to provide for the maintenance of a Carnegie library.

E. R. Sims, manager of the Calgary Amusement Co., will probably erect a new theatre building at Edmonton.

Plans are being prepared by Harry J. Rill, Detroit, for an auditorium building at Chatham for the Ursuline Sisters.

The two wings of St. Jerome's College, Berlin, which were recently destroyed by fire, will be rebuilt in the spring.

Chas. Bernier has prepared plans for the erection of a school at Montreal for the Catholic school commissioners at a cost of $60,000.

Talbot Street Baptists, London, are contemplating either the enlargement of their present building or the erection of a new church.

A new school will be erected on the site of the old Bruce School in South Dumfries near Brantford. Tenders for the equipment will be asked for shortly.

Toronto ratepayers have approved a by-law in favor of a grant of $50,000 to each of four hospitals—the Western, Grace, St. Michael's and the Home for Incurables. This money will be used to extending the buildings.

The ratepayers of Waterloo, Ont., have carried a by-law to raise $15,000 for the building of a ward school and $3,000 for the erection of an isolation hospital.

It is understood that a new post office will be erected in Dundas soon. A Government inspector was in town last week looking for a site for such a building. The cost of the structure is expected to be in the neighborhood of $35,000 and $40,000.

Municipal Undertakings.

Renfrew ratepayers have approved a by-law to expend $5,000 upon sewer extensions.

The ratepayers of Galt have approved a by-law to raise $12,000 for electric light extensions.

The ratepayers of Stratford have carried a by-law to spend $25,000 on sewage disposal works.

The ratepayers of St. Thomas have approved a by-law to raise $40,000 for septic tanks for city sewage.

The by-law to provide for the cost of a new filtering basin for the Meaford waterworks has been carried.

The Canada Iron Corporation, Fort William, was awarded a contract for 12,300 feet of 18-inch water main for that town.

Winnipeg has declared for a municipal power plant and work will be commenced at once on a plant on the Winnipeg River.

The Ontario Railway and Municipal Board have approved a by-law to raise $28,000 for sewer construction at Fort Frances.

A. F. Macallum and T. Aird Murray, consulting engineers, Toronto, are preparing plans for the installation of the proposed sewerage system in New Toronto.

A syndicate of English capitalists has offered, under certain conditions, to construct the pipe line from Sooke Lake to Victoria, and other necessary work in connection therewith, to connect with the city's waterworks system, all ready for the city's consumption. The work will cost about $1,500,000. The city is to pay 5 per cent. on the work as constructed, and is to pay all cost of maintenance and expense of operation. The city, at the end of 35 years is to have the option of purchasing the wnole property at cost.

Work will soon commence on the construction of the large surface drain at Victoria from the end of the present corner of Cook and View streets, to the sea shore, near the cemetery. The work will call for an outlay in the neighborhood of $45,000, and will be the most expensive portion of the system to be installed under the scheme provided for in the recent by-law authorizing the expenditure of $150,000.

The franchise of the city streets has been extended for three months to the men who are interested in securing natural gas for Peterboro. They have been unable to obtain a lease of the land desired owing to the refusal of four of the farmers who own a part of it to come to an agreement. Mr. Dettman, of Waynesburg, Pa., is chiefly interested in the proposition together with ex-Ald. R. Leary. The latter went to Lindsay during the week and states that if no agreement is arrived at here they will devote their attentions to securing land near Lindsay as the same conditions for natural gas are said to exist there.

J. R. Terrill, the well known representative of Caverhill, Learmont & Co., Montreal, has again been re-elected by acclamation a town councillor for the Municipality of Ahuntsic, Que. Since Mr. Terrill has entered the council he has endeavored to make this municipality, which is a suburb only ten miles from Montreal, thoroughly up to date. A new drainage system, of the latest plan has been put in, also new pumphouse, high voltage electric lights, and sidewalks.

General Building Notes.

Calgary expects a building boom this year.

James Ince will build a $10,000 residence at Toronto.

A new $400,000 hotel is proposed to be built at Montreal.

R. E. Sherlock, Lethbridge, will build a $17,000 business block.

Douglas & Thorley, Vancouver, propose to build a $20,000 hotel.

A. Filion, Vancouver, will spend $15,000 on additions to his building.

The Sun Life Assurance Co. will erect a large office building at Montreal.

The National Finance Co. will erect a $30,000 business block at Vancouver.

The Codson Block a commercial building at Vancouver, will cost $50,000.

The Canadian Bank of Commerce will erect a $40,000 bank at Lethbridge, Alta.

Bauer & Harrison will erect a $150,000 steel and contrete hotel at Vancouver.

The Robert Simpson Co., Toronto, will erect a large brick and stone stable.

R. G. Clare will re-build his store at Warman, which was recently destroyed by fire.

Victoria's building permits for one day recently totalled $8,000, most small dwellings.

A new Y.M.C.A. building will probably be erected at New Westminster this year.

A business block will be erected at Victoria by W. & J. Wilson, at a cost of $25,000.

W. H. T. Stevens, Toronto, will build three pairs of dwellings at a cost of $10,000.

Gordon & Campbell will erect a $25,000 store and apartment building at Vancouver.

Plans are being prepared for the erection of a new three-storey hotel at Lethbridge.

J. G. and E. Y. Lightheart, Vancouver, will spend $15,000 on a block of six dwellings.

The Kirk & Whitman Clothing Co. will construct a modern brick block at North Sydney.

H. W. Hudson, Prince Albert, will erect a three-storey business block at a cost of $6,000.

The Banfield building, a $20,000 tenement structure, will be erected this season at Vancouver.

A $15,000 building to be called the Fuller Block, will be erected at Vancouver this season.

McMorine Bros., Richmond Que., will greatly enlarge their department store by additional building.

Plans for buildings valued at $250,000 are being considered by the Vancouver building inspector.

Plans have been prepared for an apartment house at Montreal for David Sperber, at a cost of $15,000.

P. Burns & Co.'s block at Wetaskiwin, Alta., was burned at a loss of $70,000. It will likely be rebuilt.

A new central Y.M.C.A. building, to be the finest in Canada, is proposed to be built at Toronto. A fund of $1,000,000 to aid this work will be raised.

Honeyman & Curtis, Vancouver, have prepared plans for the erection of the Canadian General Electric Company's new building to be built there at a cost of $70,000.

The Masons of New Westminster have plans ready for a large new temple. It will be two stories in height, frame, and of pleasing architecture. The cost will be in the neighborhood of $20,000.

J. S. Mitchell will build a large business block at Sherbrooke, as will also H. C. Wilson & Sons. McKenna Bros., of the same place, will erect a new store, and a number of residences will also go up.

Prospects are bright for the erection of another big building on Sparks St., Ottawa, on the site of Ahern & Soper's premises by this firm. The proposed building will be a six-storey structure of steel and concrete.

Another apartment house is announced for erection on Albert Street, Ottawa, facing the City Hall Square. It will be erected by H. N. Bate, and will adjoin the Aylmer Apartments, which front on Slater Street.

During the present year there will be an unprecedented amount of building in Galt. Last year, despite the financial flurry, more than 100 new houses were erected and this year that number will be more than doubled. This means a whole lot to trades of all kinds, and the hardware man and the plumber will come in for a good portion of the benefit.

With a record above all others for the past year in building, the new year in Vancouver starts in with very favorable indications that 1909 will not be behind. During a recent week the value of permits issued was $74,170, a very good showing at a time of year when building is supposed to be off. Not only that, but plans are being prepared for several large blocks. One firm, Parr & Fee, have placed before the building inspector plans totalling a value of $250,000. The largest of these is for an hotel for Bauer & Harrison, to cost $150,000, and will be located at the corner of Howe and Hastings Streets, just across from the new post office. It will be 70x120 feet, seven stories high. The Banfield building at the corner of Bute and Melville, will cost $20,000, and will be used for rooming purposes. Another similar building will be built by Gordon & Campbell, at the corner of Hornby and Dunsmuir, to cost $25,000. Douglas and Thorley will build on Granville, at an expenditure of $20,000. The Fuller block will cost $15,000, while the Godson building at $50,000, and improvements by F. Filion at $15,000 give a large total for a fine start for the year.

ILLUSTRATIONS IN ADVERTISEMENTS.

Of the five senses, sight conveys the most lasting impression to the mind. See a thing in life and the mind can give a good description of it. Seeing a picture of an article will often give a correct idea of its shape, size and usefulness. Nothing short of the article itself will arrest the attention so quickly or make such a lasting impression upon the mind as a picture. For that reason, illustrations are an essential feature in advertising. They sometimes save long detailed descriptions, and are powerful as indirect suggestions. A fur coat suggests warmth ; a trunk suggests travel ; a lamp suggests light ; while an automobile suggests pleasure and luxury.

A picture of a modern bathroom, a kitchen or a laundry room, assists the imagination of the reader to compel the will to "go shopping." Illustrations appeal to the imagination more strongly than words. Many words would be necessary to make the same mental effect as a good picture.

Pictures to make a pleasing impression must be well executed. Cheap cuts, cheap pictures ; ridiculous or objectionable scenes are all negative suggestions and have the effect of repelling instead of attracting. "He succeeds best who pleases most" would be a good motto for any man's desk.

Illustrations have been the indirect cause of creating more advertising than any other cause. A beautiful illustration appeals to the advertiser as it appeals to the buyer, and makes a clear, pleasing and lasting impression upon the mind. There is a psychological law sustaining this contention. This law is generally recognized and applied with great advantage to modern advertising ; but a cut or illustration is all sufficient. They do not set forth the reasons for purchasing.

Frank H. Bell, a warehouseman in the employ of the James Robertson Co., Toronto, for some ten years, has gone to Boston to claim a legacy of about $7,000 left by his mother, who died there recently.

Condensed or "Want" Ads.

MISCELLANEOUS.

HIGH CLASS COLOR WORK.—Commercial stationery, posters. The Hough Lithographing Co. Limited. Office, No. 3 Jarvis Street, Toronto Telephone, Main 1576. Art, good workmanship business methods.

IT PAYS FOR ITSELF—The money you are now losing because you haven't a National Cash Register, would pay for one in a short time. The National Cash Register Co., F. E. Mutton, Canadian Manager, cor. Yonge St. and Wilton Ave., Toronto, Ont.

ADDING TYPEWRITERS write, add or subtract in one operation. Elliott Fisher, Limited, 129 Bay Street, Toronto.

DUPLICATING DEVICES.

IF INTERESTED in a Duplicating Machine for getting out circular letters, reports, price-lists, etc , or for printing various office forms, write for booklet and samples of work. The "POLYGRAPH" is the new st, latest and best, and sells for a lower price than the others. Is unexcelled by any similar device on the market. F.W Tenney, Canadian Sales Agent, 123 Bay St., Room 116 Stair Building, Toronto, Canada. (tf)

REPRESENTATIVE WANTED.

WANTED in every town and village, a representative to take charge of the circulation of our various publications:—Hardware and Metal, Canadian Grocer, Financial Post, Plumber and Steamfitter, Dry Goods Review, Printer and Publisher, Bookseller and Stationer, Canadian Machinery, and Busy Man's Magazine. Good financial standing and business connection a strong recommendation. Just the position for a retired business man for his spare time. The MacLean Publishing Company, Limited, Toronto.

SALESMAN WANTED.

SALESMAN WANTED for western Canada. Must have knowledge of plumbing supplies; able to figure hot water and steam heating. State age, experience and references to Box 792, PLUMBER AND STEAMFITTER, Toronto.

Advertising for Plumbing and Heating Business

Maybe the first advertisement won't do the trick, maybe it will be the tenth—but unconsciously as he reads he (the buyer) will form a mental resolve to try that aeticle—the logical data-built arguments have convinced him, lifted the latch to his will and broken the clutch of the hand holding the coin.—The Mahin Messenger.

* * *

The foregoing piece of wisdom was extracted from an article which sought to emphasize the need of data-built advertising—that is advertising written around the facts of the advertiser's business. And, after all, that is the only kind of advertising that contains the ring of sincerity that produces conviction.

Many plumbers don't consider advertising necessary in their business ; some plumbers believe in it to the extent of using a business card in the directory; some look at it in the right light, use live, persistent newspaper advertising and succeed accordingly.

Advertising is good for any legitimate business proposition—plumbing and steamfitting being no exception. To make money you must do business; to do business you must have customers , to have customers you must make yourself known to people, and the best way to make yourself known to the people in your locality is to advertise well and persistently in your best local newspapers.

Everybody reads the newspaper. If you make your advertising attractive enough most readers of the newspaper which contains it will read your advertisement. People in immediate need of a plumber will read it with interest, because it is a subject on the top of their minds. People not in immediate need of a plumber will read it and pass on. It will have made a certain impression on their minds. The more attractive the ad. the stronger the impression. Some day those people will need the services of a plumber. Your chance of getting the business depends upon how strongly and how persistently you have advertised.

Persistence is of the very essence of good advertising—the occasional advertiser seldom gets there. It's like cutting a thread on an iron pipe—you've got to turn the die stock until the thread is complete. When you advertise you've got to continue advertising all the time until you decide that you don't want to grow any more. That's the way you pick up your cumulative results.

One or two strong advertisements in a strong newspaper may bring you a certain amount of direct business ; but the way to get the business that isn't quite ready yet, but which is developing is to advertise persistently.

An attractive ad. is made up of three elements—attraction, interest, persuasion. An ad. can therefore only be successful in the degree in which it combines those three essentials.

Attraction is the easiest to attain. It can be produced by type display, by illustration, border effect or the effective wording of a paragraph headline. To hold the interest when attention has been obtained is harder ; and to persuade or convince, harder still. To hold interest and accomplish persuasion requires a knowledge of your proposition and a knowledge of the people to whom it is addressed. In a general way it may be said that appeals to the Luman love of comfort, and economy is a good way to hold interest in plumbing advertisements ; while proved assertions of your ability and reasonable prices help to persuade the reader to call for you when in need of a plumber.

* * *

The advertisement of the Western Plumbing and Heating Company, reproduced on this page is an excellent example of good plumbing advertising. It's generous size, its simple type display and its oddly broken border make it strong in attraction. Its brief and well-worded paragraph holds interest by its brief assertiveness, while the list of references makes a convincing argument.

Let this Fact Impress Itself Upon You
If you contemplate installing a system of Plumbing or Heating, or both, in your house or public building ; If you want absolute satisfaction guaranteed, you cannot do better than come to us. We make a specialty of these branches. Best of Workmanship, Best of Material, Best of Prices. Estimates Cheerfully Furnished.
References
PLUMBING AND HEATING
Empire Block, Hanson Block,
Bank of Commerce, Sutherland Block,
Gordon & Sparling Block,
Brewery and Brewery Residence,
Saskatoon Court House,
Battleford Court House,
New City Fire Hall, Saskatoon Nursery,
Jos. Wilson's Residence, J. F. Cairns
Jas. Willoughby's Residence,
Sheriff Calder's Residence
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Plans for the new Calgary fire hall have been completed. The building will be erected on the site of the present Central fire hall. The estimated cost is $42,000.

PLUMBING AND HEATING MARKETS

MONTREAL.

Jan. 26.—Although trade continues on the quiet side, a strong feeling of confidence is growing as to the prospects of spring business. The supply houses have booked up well, and the fact that they intend to carry heavy stocks show how assured they feel as to trend of trade. In many cases, too, delivery is being hurried as the spring demand is expected to open at an early date. Architects are still extremely busy, and the building outlook is very favorable. Good business is also expected from Three Rivers. Some fine contracts have been secured by Montreal contractors, and others are expected. The local contractors have more than they can handle. All this is exceedingly promising for Montreal supply houses.

Plumbers generally have had a fair amount of work on their books during the past fortnight. Some have been extremely busy. Others have been somewhat the reverse, but taking things all in all the winter is not panning out badly. Jobbing work has been fair, improvements in the heating systems of flats and houses being a strong part of the business. The mildness of the weather has enabled building to be carried on quickly, and as a result business has accrued to plumbers that was not expected until later on. The markets are on the firm side, with practically no change from last quotations.

IRON PIPE—A fair amount of pipe is moving for this time of the year. Supplies are good. We continue to quote ½-in. black, $2.63; galvanized, $3.48; 1-in. black, $5.11; galvanized, $6.76.

SOIL PIPE—Good orders are reported for spring delivery. In fact shipment is being hastened in some cases. There seems a prospect of a change in prices, but at present the usual discounts obtain. We quote: Light, 3 to 6 in., 60 off; medium to heavy, 2 to 6 in., 70 off; 8 in., heavy, 40 off.

LEAD PIPE—Trade has shown signs of improvement, and some fair sized orders have gone out. A strong spring demand is confidently expected. We continue to quote pipe and waste at 27½ off. Traps and bends at 50; calking lead at 5c per pound.

SOLDER—There is not much change in the situation. Trade is on the quiet side with supply houses carrying good stocks. We continue to quote 19½c for half and half, and 18½c for wiping.

BRASS GOODS—Trade is looking up a little in brass lines, and some good orders have been placed. The market is generally unchanged, although cutting in some lines continues. We quote: Standard compression work, 70 per cent.; fuller work, 70 and 10 per cent.; flatway stop and waste cocks are 65 per cent.; round way, 50 and 10. Compression bath cocks (No. 4), $1.65, and No. 4½ Fuller's, $2.25.

ENAMELWARE — Manufacturers report busy times on heavy orders taken in December. Jobbers have not only booked for a good spring trade, but they are wanting delivery hastened, thus showing that an early spring demand is anticipated. Prices generally on the best lines are unchanged.

RADIATORS AND BOILERS — Continued activity is apparent among manufacturers and good stocks are being worked up. Some fair orders have been placed. There is no change in prices, which are as follows: Radiators at 52½ and boilers at 50 and 10 off. Steam fittings are 66 2-3 off.

METALS—A weakness in tin and copper in the primary markets caused both copper and tin prices to decline locally. Trade is good, and there is plenty of assurance as to strong business. We quote: Ingot copper, $15.50; ingot tin, $33; lead, $3.70; pig iron, Middlesboro No. 1, $18.50 to $19; Summerlee, $20. Heavy scrap red brass is 10½c; light copper, 10½c; heavy lead, 2½c.

TORONTO.

January 30.—A closer feeling exists among the brass men to-day than has been the case at any time since the beginning of the depression, over a year ago, and a firmer tone is noted in the brass market. No doubt the prospect of future business has much to do with this, and it is well, for a satisfactory understanding now exists which will help plumber and jobber alike. While prices have advanced somewhat they are now at a common level for common grades. The change in discounts took effect January 22.

Some lines of closet combinations have also slightly increased, while solder and oakum are a little easier.

The "better times ahead" feeling is gaining strength and while orders are not large, inquiries are sufficiently plentiful to presage good business near at hand. Some plumbers continue to receive contracts for new work, and builders and architects are busy with plans for buildings to go up when the season opens. While this does not mean that every plumber is busy with work just at present, it does mean that a decidedly better prospect looms up than was the case this time last year.

BRASS GOODS—Prices have advanced for fuller and compression work and the cutting prevalent during the past several months is absent. Ground work is at 70 per cent. off list instead of 75 per cent.; and compression work 65 and 5 instead of 70 per cent. Some of the new discounts are:—No. O compression basin cocks, T handle, $6.50 doz.; same with cross handle, $7 doz.; No. 1 with T handle, $7.25, cross handle $7.75; No. 4 compression bath cock, $1.65 each. Fuller bibs, ½ to ⅝ inch, 70 per cent.; ¾ to 1 inch, 60 per cent off list. No. O fuller basin cocks, 75 per cent.; Nos. 1 and 2, 70 per cent.; 1¼ inch combination bath wastes, $1.35 each. Nickel-plated basin traps, 55 per cent.

CLOSETS—A slight price revision has taken place and a firmer tone is noted. Low down closets, wash downs, are now $15 each.

OAKUM—This line is still at 5 cents a pound, though an easier feeling exists for 100-lb. bales, which may be had at prices running from $4.50 to $4.75.

IRON PIPE AND FITTINGS—Quietly steady is this line. There is not now the cutting noted earlier in the month. Samples of a new enamelled pipe are being shown the trade, and it is expected some of this will go into new houses to be erected this spring. Cast iron pipe is still quoted at 70 and at 80 per cent. by standard houses, and malleable at 37½ and 40 per cent. 1-in. black is still at $5.11, and 1-in. galvanized is at $6.76. The other items under this head are at the regular quotations except malleable lipped unions, which are at 60 instead of 55 p.c.

SOIL PIPE—With the continued open weather a little better trading is being done than is usually expected at this season of year. Stocks are none too plentiful as yet. Prices are unchanged. Light pipe is 60 and fittings 70 per cent.; medium and extra heavy pipe and fittings are 70 per cent.

LEAD PIPE—Fair business is being done at stationary prices. Calking lead is 4½ cents to 5c per pound; traps and bends, 50; and pipe and waste 27½ off.

ENAMELWARE — Unchanged prices prevail. While there is no rush, sufficient business is being done to keep jobbers happy. The factories, however, are running full time in anticipation of promised spring orders.

SOLDER—A slightly easier feeling is abroad, with unchanged trade conditions. Wiping solder is at 18½c, and half and half, 19c.

BOILERS AND RADIATORS — Increasing in activity are heating lines. Prices are unchanged. All over the country building is increasing with a consequent increased demand for boilers and radiators.

J. Walden, hardwareman and plumber North Vancouver, has sold his business to McMillan & Paine.

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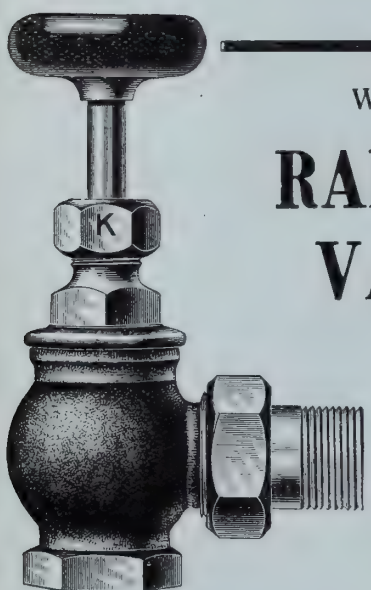

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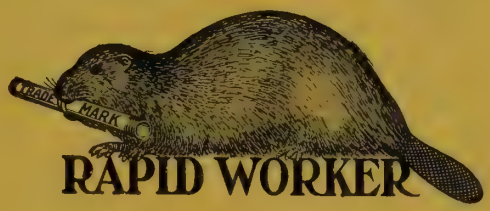

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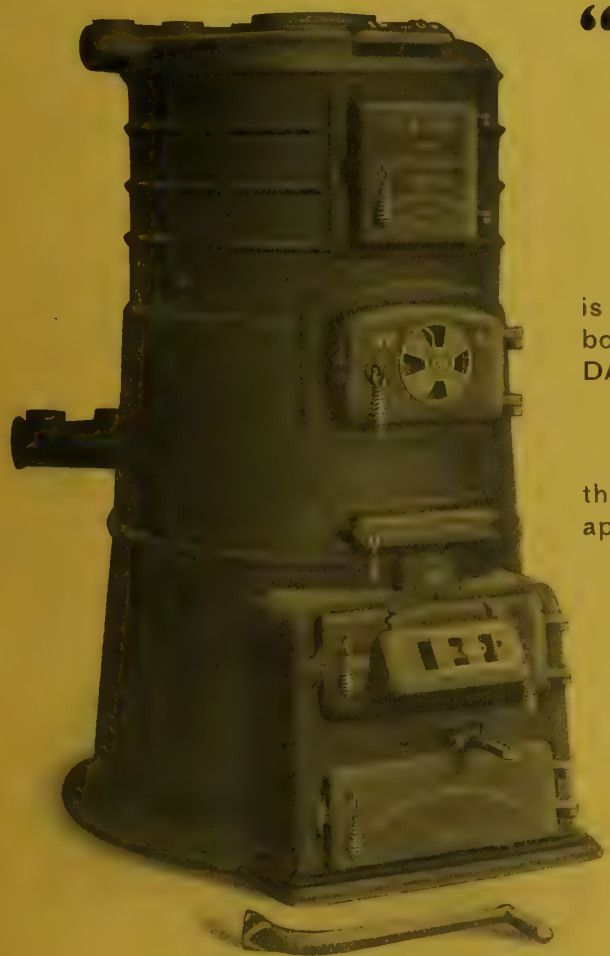

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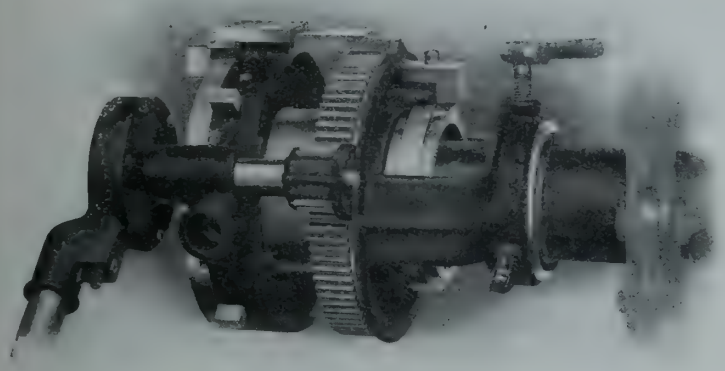

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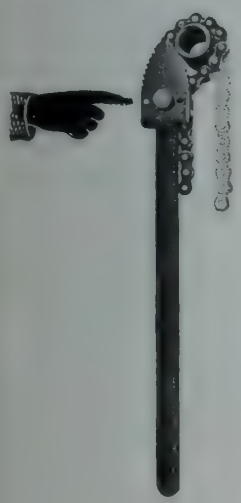

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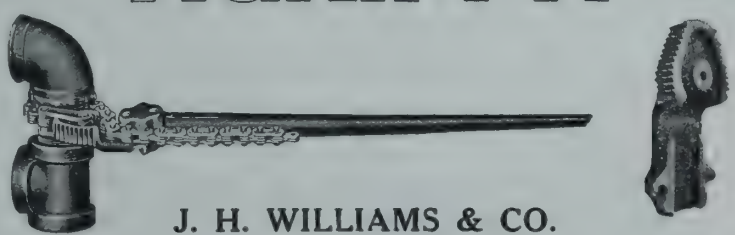

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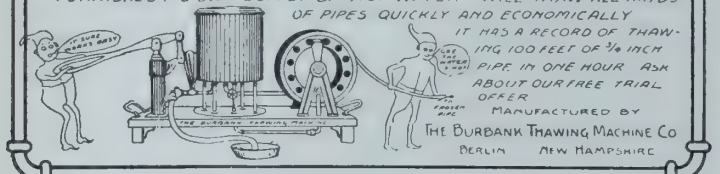

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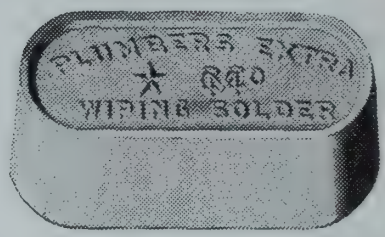

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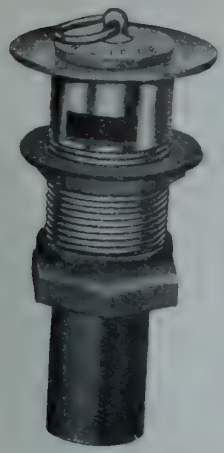

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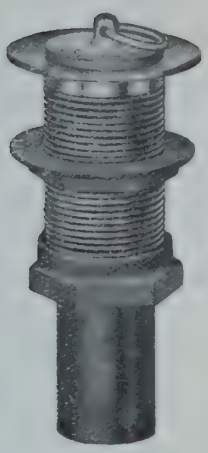

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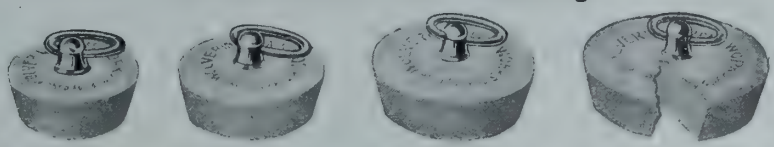

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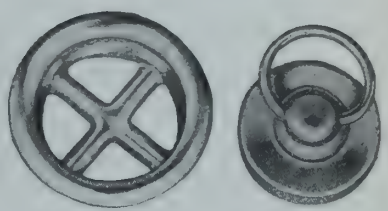

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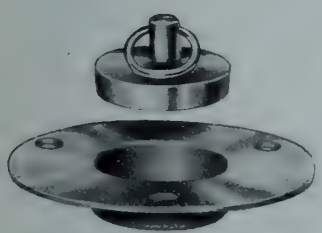
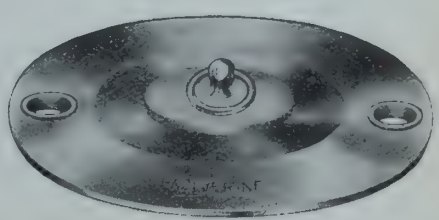


Brass Wash Tray Plugs

Sink Strainers



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MONTREAL, TORONTO AND WINNIPEG, FEBRUARY 15, 1909

PUBLIC COMFORT STATIONS.

One of the most important problems confronting the dwellers in modern cities is that of supplying to its visitors and citizens the conveniences required by nature. The absence of such public places throws the burden for providing conveniences of this class upon private enterprise, and in Canadian cities the need is met by retail merchants, hotels, restaurants, office buildings, railroad stations and saloons. In spite of the great use of these private conveniences by the public, there is still a very great need which is not met as visitors to a city are strange to its local institutions and know not where they may go to find such conveniences. Moral considerations, too, prevent many people from utilizing the saloon which is, however, the most common place of resort, while others forced to the extremity, purchase that which the saloon has for sale as a recognition of the indebtedness incurred, when otherwise they would not be led to do so.

Another article is published in this issue dealing with this subject, and one of the stations established in Toronto is described. These will be followed up in future issues by descriptions of what other Canadian cities have done and what they have not done, the aim being to provide material for plumbers in the larger Canadian cities to supply their local papers with in order to start an agitation for such conveniences.

Ask your local editors to take the matter up, and supply them with arguments showing the need of the public and the duty of the citizens.

INSANITARY BUILDINGS IN CITIES

During the past two years Washington, D.C., has been a pattern city with regard to abolishing buildings known to be insanitary and harmful to the health and lives of human beings. More than a thousand such buildings have been either destroyed or brought up to the proper standard in that city in the past two years.

Every city in the land can well afford to take thought against the occurrence and growth of such degrading conditions; our newer communities should make strict regulations that would forever remove the opportunity or temptation to establish within their limits "unlivable" housing conditions; our growing districts should stamp out incipient evils before the "vested interests" fattening thereon become too mighty and resistant; our crowded and populous centres should as speedily as possible eradicate insanitary and degrading conditions of tenements, factories and other buildings. Aside from the considerable influence humanitarian feeling should have with us, the sense of self protection of every citizen should arouse him to surround himself, his family, his interests with safe conditions, with health. Slums are a curse, an offense and a danger to every part of the social organism of which they form a part.

Toronto, which has in "the Ward" and other districts, conditions about as bad as those Washington is trying to rid itself of, should follow Winnipeg in issuing an order compelling property owners to make their premises sanitary.

AIM TO BE MORE THAN A MECHANIC.

Once again we would advise all young plumbers, and even those of older growth, to take advantage of the long winter evenings to commence a course of study in those simple scientific principles which enter so largely into their trade. The time has come now when the plumbing industry must be lifted to a higher plane. All forces are working in this direction. The plumbing by-laws of the country are becoming more exacting, and rightly so; and in this movement plumbers are willing co-helpers.

Higher class workmanship is expected from the plumber, and as sanitary and heating systems become more and more scientific, so the plumber to grasp the wider principles involved and to utilize them to their best advantage, must be as well informed in theory as he is in practice. The plumbing of any large building now-a-days means as much work as hundreds of the average jobs in the past, and a much greater amount of thinking. The increase in the dimensions of the average building, the constant changes in material and in design of fixtures; the awakening of the people to the value of the most perfect sanitary conveniences, and the consequent development of sanitary science; all produce a state of conditions which the old plumber could not deal with intelligently. Every step taken in this evolution makes it more important, nay, even necessary, that the younger man should be so educated as to deal with them in a comprehensive manner.

The consumer, likewise, now-a-days, expects more from the plumber. He likes to have an intelligent man who can give him interesting details of the why and wherefore of the system that is being installed. The value of the work goes up in the mind of the consumer

in a relative degree with the extent of the information that is given, and the praise bestowed is not confined to the workman, but is reflected upon the firm employing him. "None but a good firm could employ such an intelligent man," is the comment made. The value of such an advertisement is apparent. Knowledge is power and the man possessing this factor not only does excellent work but draws custom for his firm and in so doing advances himself as a paying force.

In various ways progressive plumbers are trying to improve the status of the plumbing industry. The National Association is working hard in this direction, and no greater help could be given the movement than the general improvement in the education of the young men who in time to come will form as master plumbers the real strength of the plumbing industry. We want on one hand less failures and less shoddy work, and on the other a more general appreciation of the plumber as a strong force in the commercial progress of the nation, and therefore a man to be ranked high among the handicraftsmen of the country.

Many an evening given to amusement could profitably be employed in reading standard works. Where evening classes or correspondence schools are not available the young man can always find some one of experience who is willing to direct him in the right way; and when once reading is taken up regularly, it is astonishing how easy it is to maintain the habit. As a writer recently put it, the season for study never passes, and the successful greybeard will often be found reading something technical and comparing the ideas expressed with his own experience. Often he has surprised his old employees by a change of method, which is due to something new he has learned. When he retires his place will be filled by the man best equipped with knowledge to meet its demand. Such a place will be open for every young man who starts in now and keeps up the study in preparation to take the opportunity when it offers. How well equipped is the young man who is versed in the general laws of sanitation, in the drawing theory of plumbing design, and has had some training in estimating. If he knows something of arithmetic, mechanical drawing, chemistry, mechanics, and hydrodynamics, if he possesses a thorough knowledge of the conditions under which plumbing may become a source of danger; if he knows something of the soundness or otherwise of materials, of the security or otherwise of trapping and venting he is on the high road to success. Study on these lines should not be difficult for those who really mean to increase their knowledge, and how much greater are the prospects of the young man who can not only plan and execute work according to modern scientific standards, but can give an intelligent reason for so doing.

QUESTIONABLE WATER SUPPLY IN RURAL DISTRICTS.

It is acknowledged that risk to health attends carelessness about keeping the surface of the ground around wells clear from the accumulations of refuse of any character. Its decomposition means that it is a culture for bacteria, to be carried into the well by the seepage of surface water into the ground. It is equally agreed that the use of wells for supplying drinking water is a menace to the health in communities where there are a large number of cesspools or privy vaults. While these facts are clear to students of the problem, points out The Metal Worker, it is evident that there is need for the spread of the information among the people generally, so that they will also be aware of the imperative necessity of keeping the supply of drinking water pure.

The secretary of the Board of Health of Michigan and the State Sanitary Engineer prepared a number of questions which were issued to the health officers in different parts of the State, and the replies showed that in 80 out of 126 localities from which replies were received, the water supply is derived from wells, and that half of the wells are from 10 to 20 ft. in depth, showing how readily the surface water could have a contaminating effect upon the drinking water from such a well. The reply as to the character of the water showed that 10 per cent. was of a bad quality. The replies also showed that 43 per cent. of the other sources of supply are in danger of contamination, owing to the lack of care about the source of the supply.

The investigation also discloses that in many places where there is a public water supply there is no sewer system; consequently cesspools and similar contrivances continue to poison the ground water, and it is possible for this poisoned water to follow along until it reaches an underground stream so that it may also have a polluting influence on the drinking water in some distant locality. As a rule, when the demand is made for a public water supply to take the place of private wells, it is seldom accompanied with the demand for a sewerage system, though the necessity for one is evidence of the necessity for the other, and they should go hand in hand wherever either is called for. The plumber has performed a commendable part in calling attention to the necessity of providing a good sewerage system, and having all buildings properly connected with it. He can render an equally important public service by expending energy in bringing to the attention of the public the necessity of seeing that the source of public water supply is uncontaminated, and kept so.

LESS REPAIR WORK.

"The winters do not bring the harvest of work to the plumbers of Toronto that they did some years ago," remarked a leading plumber the other day. "The reason for this is that a great deal better work is being done than formerly, and greater care is exercised to protect plumbing from the cold. After all, the repairing that had to be done on account of damage by frost was not satisfactory work at the best. It was dirty and annoying work and plumbers are practically just as well off without it. At any rate, personally, I do not regret having fewer of these jobs to do."

Baths in a brewery for public use exist in Brooklyn, N.Y. They mark a philanthropic endeavor on the part of S. Liebmann, owner of the brewery, to provide baths to the tenement house dwellers of the vicinity, not as a piece of charity, but as an acceptable convenience available for a minimum cost. The possibility of maintaining a cheap service comes in part from the fact that there is available a supply of hot water at all times in the brewery and in part because use is made of the linen bags in which the hops are imported. The linen sacks are split and hemmed for a trifling sum and make a serviceable towel.

Underground Public Conveniences

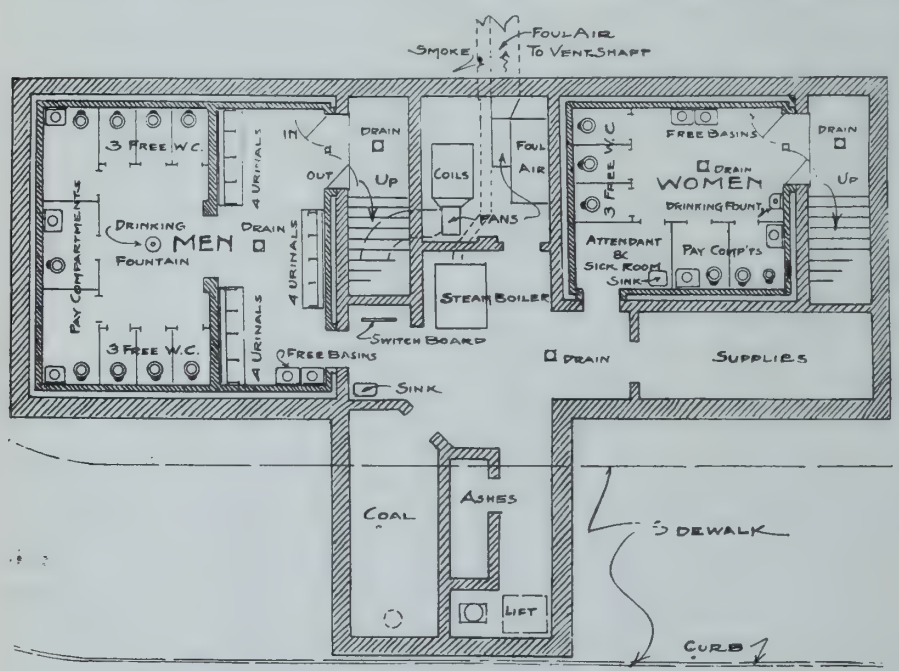
Their Design and Construction Described in the Metal Worker by A. R. McGonegal, Sanitary Engineer, Washington, D.C.

The location of a public convenience station, especially the first one to be built in a city, naturally suggests itself. There is only one "busiest" corner, usually the crossing of the two main arteries of travel, as well as a street railroad transfer point, and the centre of the business district.

The location of subsequent stations, however, requires much study and care, as each one should serve the locality of next greatest need. The mere fact that there is a bit of parking or that the city may happen to own property at some point is no excuse for the location of a station unless it be also the proper point for its erection from the standpoint of greatest service to the people.

On account of the fact that few ideal locations for public convenience stations are coincident with open space sufficient for the building of a station above ground, the solution of the difficulty is the construction of a station of the underground type. While the great majority of underground stations already built are almost failures from the "sweet and clean" standpoint, it is not from the fact of their being located beneath the surface, but from the fact that in nearly all instances the designers did not realize the utter necessity for providing for adequate mechanical ventilation, for perfect waterproofing, and for the proper insulation of the walls and roof. Serious errors in design have been repeated instation after station on account of the unfamiliarity of the designer with his subject, and his lack of information on the "reasons why" for all the various considerations entering into the building of an underground structure which must be the very opposite of the usual damp, ill-ventilated cellar or vault.

The work of designing an underground convenience station should be intrusted to a competent engineer with experience in, or with a knowledge of, this particular class of work. The engineer generally builds his house around the mechanical point, while the average architect puts the mechanical plant in the house. I do not mean by this that the symmetry of plan and artistic finish of interior should be passed over, but that it is of very secondary importance.



Plan of a Public Convenience Station for Men and Women.

With the right man working on the plans there is no reason why an underground station cannot be built in any city, which would be as clean and sanitary as any similar building above ground at about the same cost, and capable of being maintained for less money.

In determining the size of a station, it is well to bear in mind that a very few fixtures will serve a very large number of persons, and that every square foot added to the size of a station costs money both to build and maintain. It takes just so much more power to run the fans, so much more coal to heat, so much more soap and other cleaning material, and, perhaps, repairs, each year of its existence.

The Capacity to Accommodate.

For the most congested point in a city of about 250,000 population, probably a 10-closet station would be ample. For less congested points in a city of that size and for busiest points in smaller towns a six-closet station would answer. A 10-closet station would contain 10 water closets, 15 to 20 urinals and 3 lavatories for men; 4 water closets and 2 lavatories for women; as well as a sick and emergency room on the women's side, and a slop sink for each attendant. Pay compartments are generally added on account of the revenue, and if proper devices are installed to check the receipts, this will amount to a considerable sum each year. The above proportions are obtained by using half again as many urinals (twice as many is sometimes used), and one-quarter as many men's lavatories as there are men's water closets. Add the men's water closets and urinals, and take one-seventh that many water closets for the women. It is well not to use less than two lavatories for free use in any case unless they are pay compartments. These proportions are based on observation at stations in operation, and is backed up by attendance records; women being from 11 to 14 per cent. of the whole number of patrons.

The number of fixtures having been determined, the building should be as compact as possible, both on account of first cost and upkeep. The stairways should be straight and not too steep, and the main doors should be duplex, one entrance and one exit door in the same frame, with a mullion in between. The rooms should be arranged, if possible, so that the entire room be within the view of the person entering, as well as the eye of the attendant. On the men's side the urinals should be near the entrance, and if there are both free and pay closets they should be plainly marked. In general, it is not good practice to line closets and urinals in batteries opposite each other, without an otherwise unnecessarily large floor space between, on account of the liability of congestion of traffic. Each room should

have a pay station telephone and a city directory, as well as a drinking fountain, preferably of the "bubble fountain" type, arranged so that it cannot be sprayed or squirted either accidentally or with intent to wet the surrounding floor.

The sick or emergency room might be also used for the female attendant, but should have ample space for a reed cot or a convertible chair. Means should be provided so that the male attendant can get to the assistance of the female attendant quickly, and either an alarm bell or speaking tube, or both, installed, as intoxicated men frequently try to enter the women's toilet.

In the construction of an underground station, it is rarely possible to conceal the male and female entrances one from the other, but they can be placed some distance apart, arranging the plan so that the women's stairway is not right at the corner. The entrances should be readily distinguishable in the day time and have illuminated signs at night.

Supplies, such as toilet paper by the case, liquid soap and cleaning powder, both of which will probably be purchased in barrels, all are bulky and make necessary a supply room of no mean dimensions; while, if the station is not located where steam may be had all the year round from some adjoining building, it will be necessary to provide a coal vault and ash bin, of probably 20 tons and 2 cu. yd. capacity, respectively. Hot water must be supplied to the lavatories and slop sinks, and a mechanical room to hold the hot water heater, the steam boiler, coils, blower and exhaust fans, and the switchboard, will probably be as large as the main toilet room for women.

The material entering into the walls, stairs, roof and floors is optional with the designer, but concrete, on account of the variety of uses to which it can be put, appears to be the ideal material. It should be a good grade of stone concrete, reinforced where necessary. The entire walls and ceilings of the two main toilet rooms should be insulated, preferably by having a hollow space, which can be used to circulate the foul air. There should be no windows, domes or vault lights to cause the formation of condensation, and consequent dampness in the station, for

Damp Places Should be Kept Clean.

Domes, sidewalk lights and other devices to get a little sunlight to save a few cents' worth of electric current have made failures of many otherwise well designed stations, and some are only kept in service by the liberal and continous use of deodorizers. I might well add another motto to the one above, "Dollars for ventilation, but not one cent for disinfectants." In spite of the changed words the meaning is really the same as its illustrious original, because proper design is the only defence against dirt and odor. It is a pity that a prominent manufacturer should advertise a certain room ventilating device in these words, "The value of perfect ventilation is inestimable. . . . It is a well-known fact that not one in a hundred public comfort stations or toilet rooms in railway stations even approach decency in this respect."

In waterproofing, the only requirement would seem to be that it be well done and that good material be used. There are many methods and it is difficult to pick the best, so much depends on the manner in which the envelope is designed, the watchfulness of the inspector and the conscience of the contractor.

Interior of Public Comfort Station in Worcester, Mass., Showing Closet with an Integral Local Vent and No Exposed Working Parts.

The system most in use is that of tarred felt and hot pitch, and there have been examples of this construction broken out after 30 years of service against pressure and found to be still in good shape. It has the very practical advantage of being made any thickness by simply mopping on more pitch and laying more thicknesses of felt, and being stiff enough to work in and on vertical walls without forms, and will generally stay in place until it is convenient to go ahead with the skin walls for its protection. Its one advantage lies in its lack of adaptability when irregular shape, sharp corners, and many pipe outlets are worked into the plan.

Practically all the other good systems are based on the use of blown oil compositions and oil refuse under various names, some being worked hot and some cold. Tarred felt and burlap are generally put in as binders, although there are cases whese no binders were used, the material being simply run in the joints and interstices that were left in the walls. I believe it to be good practice to specify some standard to be attained and then to require a special bond guaranteeing that the whole work remain water tight for a period of five years. Such a bond given by a bonding company on account of a reliable firm will tend to discourage skimping the amount and quality of labor and material used on the work. It is much better to pay well for a good job at the time of construction than to pay twice as much looking for a pinhole in the floor six months after completion. Don't ever make the mistake of accepting cement or concrete, no matter how well worked, as waterproof in any degree, as it costs a good deal of money to find out that it is very far from being so in this class of work.

Waterproof Construction Imperative.

There are various materials on the market to-day known as cement, and materials to mix with cement finishes and concrete which are advertised widely for the work of waterproofing, but I do not know of any prominent case where they have been an unqualified success and I do know of cases where they are failures. An engineer recently called my attention to a 40,000-gallon concrete tank in which a waterproofing material was mixed. It would appear to be all right for a tank, as it only leaked a bucket of water a day, but an un-

derground convenience station must not leak a drop a year.

Inasmuch as the waterproofing coat of an underground convenience station must be a continuous envelope, it must be brought to grade at the entrances and doubled under the stairways if they are within the enclosure proper which it is desired to waterproof. Special attention must be paid to the manner of providing for sewer and water connections. If the waterproofing coat be run in the floor proper, deep pockets must be left for the floor drains, urinals and other fixtures having traps below the floor line, and every fixture connection flashed by means of a sheet of lead or copper, caulked into the proper hub of pipe and worked into the waterproofing.

Only Non-absorbent Material Should be Used.

No wood should enter into the construction in any manner, except as a filling for stamped metal doors, where it would be amply protected.

Entrance to Public Lavatory, Corner Queen and Spadina, Toronto, Located Beside Street Railway Tracks in Centre of Avenue.

This is somewhat expensive both in material and labor, as the lead or copper flanges should not be less than 2 feet in diameter, of good weight; and the sewer connections so arranged that the terminal hubs be all on the line of waterproofing. A much better method is to carry the waterproofing some distance below the floor line, and bringing in the sewer and water supply lines at one point, run all connections within this space, which may later be either compactly filled with earth, built up with terra cotta, or simply left open except for piers to support the floor of the room.

There really is no material obtainable for interior finish that is ideal in practice. Structural glass cannot be economically worked in large slabs, enameled brick cannot be used both in walls and standing work, glass tile does not appear to be durable, slate is too dark, and plaster or painted material is out of the question on account of the cost of upkeep. This brings us to marble, which is somewhat porous, but it can be worked easily, and if carefully set it will last for years. It should be light in color and have pattern enough to relieve the expanse.

For building hardware, lavatory cocks and metal trimmings generally, it is better to get what is known to the trade as solid polished bronze metal. It stands the constant handling and polishing without material change in color, whereas plating of any character soon wears or peels off.

The floors should drain to a sewer connection and be of Mosaic, terrazo, or hard finished cement, and the ceiling of metal or of Guastovini tiles. In fact, the whole interior should be so designed that a hose can be used for cleaning down.

It is much better to build a small station of the best obtainable than a larger one with materials of a poorer grade. The usage of only the best grade of plumbing fixtures is also much cheaper in the end, when we consider that repair bills in the various cities run from one one hundred and eightieth to one six hundred and twenty-fifth of a cent for each person using them. Wide range! Isn't it? An examination of the class of structural materials and plumbing fixtures in the different stations makes it plain enough. When one stops to consider that each water closet in a convenience station at some congested point may be used anywhere from 100 to 400 times a day, 50 times the service that one gets in a dwelling; that the cocks on the lavatories and the hinges of the compartment doors all get proportionate usage (some of it from a very rough element), it is no wonder that the best materials and fixtures are none too good.

Water closets are of many types, both as to material and construction of the bowl and the kind of flushing device, The siphon jet bowl is pre-eminently the bowl on account of the contents being started out by the jet at the commencement of the flush without any disturbance of the water surface by the flush from the rim and its consequent comparative freedom from odors. While open tanks and valves are much used for flushing purposes, the closed tank, which fills under street pressure while the seat is occupied and flushes the bowl upon the rising and release of the seat by the user, has many advantages; it is an acknowledged water saver, the flush is very strong and complete, and has an excellent scouring action in the bowl, repairs are very infrequent, it rarely gets out of adjustment; and last, but not least, the flush is so strong that it will take out anything which will go through the opening of the siphon limb, and stoppages are almost unknown.

Ventilation by Register Preferable.

The question of using closet bowls with an integral local vent horn is largely a matter of local practice, and opinions of practical men differ. Vent horns are very breakable unless a more or less loose connection is maintained, and it is generally necessary to provide a clean-out in the vent flue or vent space to remove accumulations of paper or other matter drawn from the bowl by the strong current of air. While they do actually provide better ventilation, it is conceded that their use increases the fouling surface (practically uncleanable in some types), and I rather incline to the open register face on the wall immediately back of the fixture for ventilating purposes. Bowls made with the integral earthenware seat (prison closets) are sometimes used, but they naturally cannot be used with a seat action closet, and as a matter of fact, they are no cleaner than a well kept wooden

or metal seat. It is a crime to use an integral seat bowl in a woman's compartment, especially in the winter, when the temperature of the water passing through the rim (which is part of the seat) may be down to or below 50 degrees F.

The best material for water closet bowls is undoubtedly vitrified earthenware, as porcelain has a tendency toward crazing, and nothing is more unsightly or insanitary than an enameled iron closet bowl that has begun to "chip up."

Vitrified earthenware is rapidly being reduced in price and varied in design so as to make its use for lavatories within the possibilities of any station, no matter how cheap a fixture is desired. This material has the same good points in a lavatory that it has in a water closet bowl.

The Best Type of Urinal.

Roughly, there are four classes of urinals: the familiar bowl type, the old marble or slate wall slab and gutter with a perforated pipe, the big curved porcelain fixture set down so that the contiguous floor drains to its outlet and flushed either by a hand operated valve or by an automatic tank, and the slate, marble or glass fixture with the back of each stall continually covered with a thin film of running water overflowing through serrations in the edge of a stone or metal box,

The first two types are rarely used in a convenience station for various reasons. The semi-circular porcelain fixture can be arranged for ventilation, but being porcelain is liable to craze, in which case the soft part of the ware under the cracked glaze becomes impregnated and it is hard to keep the odor within bounds. The fan or spreader of the flushing device is generally a source of much trouble as it clogs and gets out of adjustment easily. If automatic tanks are used with this fixture the waste of the water is considerable, and if hand valves are used they will be left unused by the great majority, which will result in the creation of odors. While the "continuous overflow fiush" fixture is assuredly not perfect, it is undoubtedly the most sanitary fixture on the market, This fixture, with slate as a material, is the standard for school instalations in many cities as well as the standard of "Uncle Sam" in fitting up barracks at the army posts. For use in a public convenience station, its color is very much against its use, and we must turn to marble, which, being more porous than slate, is really not as good for the purpose, or to structural glass, which furnishes an absolutely impermeable surface of dazzling white. The cost of urinals of this class is roughly, per stall: Slate, $26; marble, $40, and glass, $100.

The consumption of water by this type of urinal can be economically regulated to as low as 22 to 25 gal. per stall per hour, which compares very favoralby with an automatic tank distribution, as the continuous flow fixture uses less water, although the backs are continuously covered with a sheet of water, leaving no dry surfaces for the formation of deposits.

The ventilation of this fixture takes place immediately over the surface of the standing water in the waste trough, the current of air passing down the lower part of the face of the urinal, across the waste trough and up into an open vent space behind the black slab, whence it is carried to the proper flue by ducts for the purpose.

Provide Ample Ventilation and Heating.

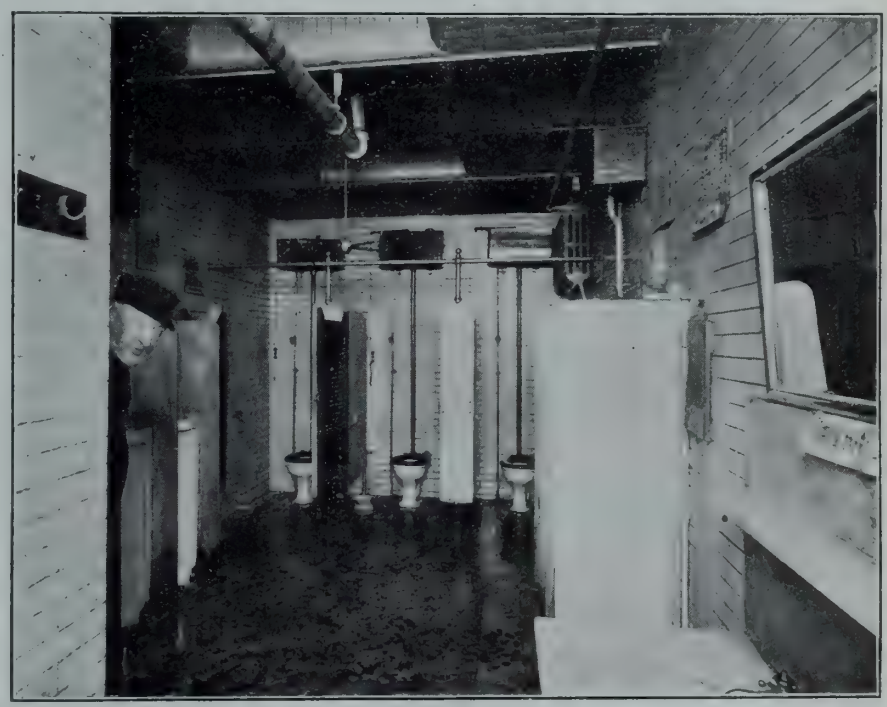
The ventilation of the building should be considered one of the most important points of the design. The blower fan should have a capacity sufficient to completely renew the air in the two toilet rooms once every 3 min., and the exhaust fan able to handle 80 to 85 per cent. as much. Motor rheostats can be obtained with "no load and overload release," and speed regulation down to about 40 per cent. below normal, which is enough to secure plenty of elasticity to the system. These rheostats, as well as the meter, main switches and the switches for the light circuits can be mounted on a single panel at some point convenient to the male attendant. It would not appear necessary that the female attendant have control over the lights in her department. It is good practice to run the lights in duplicate circuits, putting two or more lamps in each fixture in such manner that on the grounding or other accident to one circuit, the other can be immediately cut into service until such time as it is convenient to make repairs.

The heating boiler and the steam coils must be sufficient in capacity to keep up with the ventilating fans, and is apt to surprise one by its size after figuring it out.

Inadequate heating plants make it impossible to keep the ventilation plant in full service in cold weather. Lack of capacity of either heating or ventilating plant, or both, has spelled failure for more than one otherwise well designed station, the largest one in the country being a conspicuous example.

Air screens are usually installed in the fresh air intakes, and it is entirely feasible to put in an air purifier which will with its spray of cold water not only clear the air of dust and impurities, but will materially lower the temperature of the air blown in during the hot months.

The question of the ventilating shaft above ground is one that can be solved to suit the local conditions and the individual artistic ideas of the designing engineer. A single shaft may contain the fresh air intake as well as the foul air outlet and smoke flue if the fresh air registers are placed in the sides some distance from the top where they will not collect any of the outgoing currents of air; or a single shaft may contain the foul air and smoke outlets, and the regis-



Interior of Public Lavatory at Queen and Spadina, Toronto; Second Underground Station to be Erected in Toronto.

ters for admission of fresh air may be placed in the stairway areas or other suitable position. Some stations have two shafts at the opposite ends of the structures. The shaft is often placed some distance from the station on account of architectural reasons, and it does not appear to make any difference in operation if the connecting ducts are large enough. Care should be taken that the free opening through the interior of the shaft be large enough for the purpose, and that it be protected against falling leaves by means of a large mesh screen placed over the opening.

Ventilating shafts may be built of cast iron, stone, concrete, or of tiles, and many are fine examples of design as may be seen from the photographs of them that have been published from time to time.

A TORONTO CONVENIENCE STATION.

The underground public convenience station at the corner of Queen Street and Spadina Avenue, Toronto, is the third one constructed in that city, being opened on April 8, 1906. The station is built in the centre of Spadina Avenue, just below the surface of the roadway, between the street car tracks and the roadway on the west side of the street. A granolithic walk leads to it from Queen Street, and the top of the station forms a platform for street railway passengers. The only noticeable parts of the structure above the street line are the iron railing around the stairway and the vent shaft, but as both these features are of an ornamental character they do not at all mar the surroundings.

A flight of 20 concrete steps topped with metal footrests leads to the station, which is about 30 feet long, 10 feet wide and 10 feet high. The floor is marble tiled and the partitions between water closets and urinals are marble slabs. The walls, ceiling and stairway approach are lined with white-faced enamel bricks. The granolithic walk above is supported on steel beams and the ceiling bricks are held in place by being laid cantilever fashion in arches.

The water closets number three, and the urinals are six in number, the latter being in two sets, three to each bank, one set being fixed to each wall, and the closets at the far end. The stairway and approach occupy the other end, and under the stairway is the caretaker's room.

There is a double wash basin, and this with the closets and urinals are made of porcelain. Each closet has a separate flush tank, and two large tanks (one to each bank) automatically flush the urinals every minute. Soap and towels may be obtained, though a charge of five cents is made for their use.

The station is heated by a gas water heater placed in the caretaker's room. This heater consumes about 30 feet of gas per hour, and heats two wall registers, one of 66 feet radiation and the other of 28 feet, one radiator being placed at each end of the room. The gas fumes are carried off through a pipe to the main ventilator shaft, and in this shaft a jet of gas is continually burning, thus giving a constant draft, which carries off the putrid air and ventilates the interior of the room.

The station is lighted in day time through luxfer prisms set in the ceiling, and by gas at night.

While coming under the supervision of the city engineer, assistant engineer John Williams was charged with the construction of this convenience station. The work was let by contract to the Canadian Construction Co., who sub-let the work. The James Robertson Co. put in the marble work and supplied the plumbing fixtures, the plumbing work being done by Allan Gibson. The Gurney Foundry Co. installed the heating system; the Luxfer Prism Co. the lights; D. Johnson the brass work, and the Canada Foundry Co. the fence, railing, ventilator and metal work. The ventilator is an ornamental shaft of a pretty design, and its top is crowned with a gas lamp, serving the double purpose of lighting the top platform and acting as an illuminated sign for the convenience station to the passerby.

A count was made of the number of persons using the convenience during the first 39 weeks after the opening and these totalled 200,323; an average of 5,136 persons per week, or 733 persons daily. That was two years ago, and the station is used by more people now. Of course, it is not held that the station is a perfect one. No doubt many improvements will be made to those going up in the future. There is one serious drawback, however, and that is that although this convenience is the only station in the west end of Toronto, no provision has been made for the accommodation of women, the station being for the exclusive use of men.

Three more convenience stations are proposed to be built in 1909, at a cost of $15,000, and while the civic authorities do not state where these will be located, it is generally thought that one will be built in Alexander Park, another in Queen's Park and the third in Allen Gardens.

Gregoire & Audet, Sherbrooke, Que., are preparing plans for the erection of a new parish church to cost $15,000, at North Hatley, Man.

NEW SIZE "BUCKEYE" DIE STOCK

The Hart Mfg. Co., of Cleveland, Ohio, makers of adjustable threading tools, have recently put on the market a new size of their "Buckeye" die stock. It is numbered 25 and is illustrated herewith. In adapting these tools to the threading of pipe as large as four inches in diameter, they are provided with gears which, with the aid of a

New Size Buckeye Die Stock.

ratchet wrench enable all the work to be done by one man, the same as with the smaller sizes, and but one set of dies is necessary for four diameters. The gears are shrouded at the edges most exposed to injury, thus while furnishing protection the teeth are open to inspection.

Among the buildings contemplated for erection at Halifax this season are a large hotel building, a new factory for the Anderson Furniture Co., a large boat house on the Arm, near the end of Jubilee Road, and a new hotel building at Bedford.

The building operations at Montreal during January exceeded those for the corresponding month of 1908 by $41,470. There were 33 permits for new buildings, the estimated value of which was $99,745; and 17 for alterations and repairs, for an estimated value of $20,375, a total of $120,120. Last year the permits for new buildings in January numbered 27, for an estimated value of $55,650, and for alterations 9, of an estimated value of $23,000, or $78,650 in all.

Standard Fitting and Valve Company's Plant at Guelph.

Standard Fitting and Valve Works

An Important Industry Established Nearly Two Years Ago—Local Industries Supplied With Fittings and a Growing Business Done With the Plumbing and Heating Trade.

A Canadian industry, which has been making most satisfactory progress since it began operation on October 9th, 1907, is the Standard Fitting and Valve Company, of Guelph, Ontario. The works are now run at their full capacity, 125 men being employed, the larger number of whom, if not all, are doing skilled or trained labor.

During the past year, owing to the temporary depression which more or less affected all manufacturing concerns, there was a slackening up to some extent in the lines in which the company is engaged, but the outlook for the future is most promising and many orders from all parts of Canada are being filled. The Standard Fitting and Valve Company sells only to jobbers and has never disposed of any of its goods to retailers. It has representatives in every province but cover Ontario from the office in Guelph.

At present only cast iron fittings are made but in the near future valves will be manufactured and placed on the market. A large proportion of the fittings turned out are used in Guelph, particularly by the Taylor-Forbes Company and the Page-Hersey Iron, Tool and Lead Works. The company began building operations in May 1907, being organized a month previously. The plant of what was the Aird-Platte Manufacturing Company (now the Aird Manufacturing Company), of Watervlett, which is situated across the river from Troy, N. Y., was taken over and, along with a large consignment of new machinery, was placed in the specially fitted up and admirably laid out buildings in Guelph. George W. Aird is the managing director and secretary-treasurer of the company, his father, Henry Aird, being president, and John M. Taylor, vice-president. Practically all the capital stock is Canadian, the bulk of it being held by residents of Guelph. At the time the company was thinking of locating in Canada offers from other places were made but the promoters decided upon the Royal city for several reasons, one of the strongest being that its cast iron, steam water and gas fittings were largely required by Guelph industries for radiators and other products. All fittings are made from one eighth of an inch to ten inches inclusive, lock nuts, elbows, tees, crosses and Y's, caps and lock nuts, flange and flange unions, bushings and plugs and expansion plates, as well as flanged fittings from 2½ inches to 16 inches inclusive, both standard and extra heavy.

Detail and system are observed to a marked degree in the design and plan of the buildings of which W. A. Vahoney was architect and George W. Aird the designer. The foundry is 160 x 80 feet, the tapping room 80 x 70, the shipping room 120x40, the metal and wood pattern and tool room 120 x 30, the core room 40 x 20, two storey, and the office 30 x 20. All the departments are separated by walls of solid brick and fire proof doors. The buildings while somewhat irregular in shape are modern and but one purpose was in view—that of affording the greatest facility and economy in the arrangement and working plans. The pattern shop and tool room are immediately back of the office and shipping room. The remainder of the main building, to the width of thirty feet, is given up to the machine shop with the exception of the space devoted to the tapping room, behind which are the engine room and boiler house. The cleaning room is located between the tapping room and the foundry. In a separate wing of the structure are the core room, core ovens, stock storage and cupola.

Foundry Practice.

Moulding in the foundry is entirely done by machinery. Two Berkshire moulding machines, with a capacity each of 120 moulds an hour are employed. These machines are conceded to be amongst the greatest labor saving devices introduced into foundry practice in recent years. One of these machines, with two men to operate it, can turn out more work than a dozen men working under old time conditions. The operation of the machines is of interest.

The flask and bottom board having been put into position and the lever thrown, the sand is sifted in the riddle at the rear of the machine, and then conveyed in a bucket-elevator to the hopper above the machine. The flask is next automatically carried to the rear, where it is filled with sand. It then travels forward and is met in its

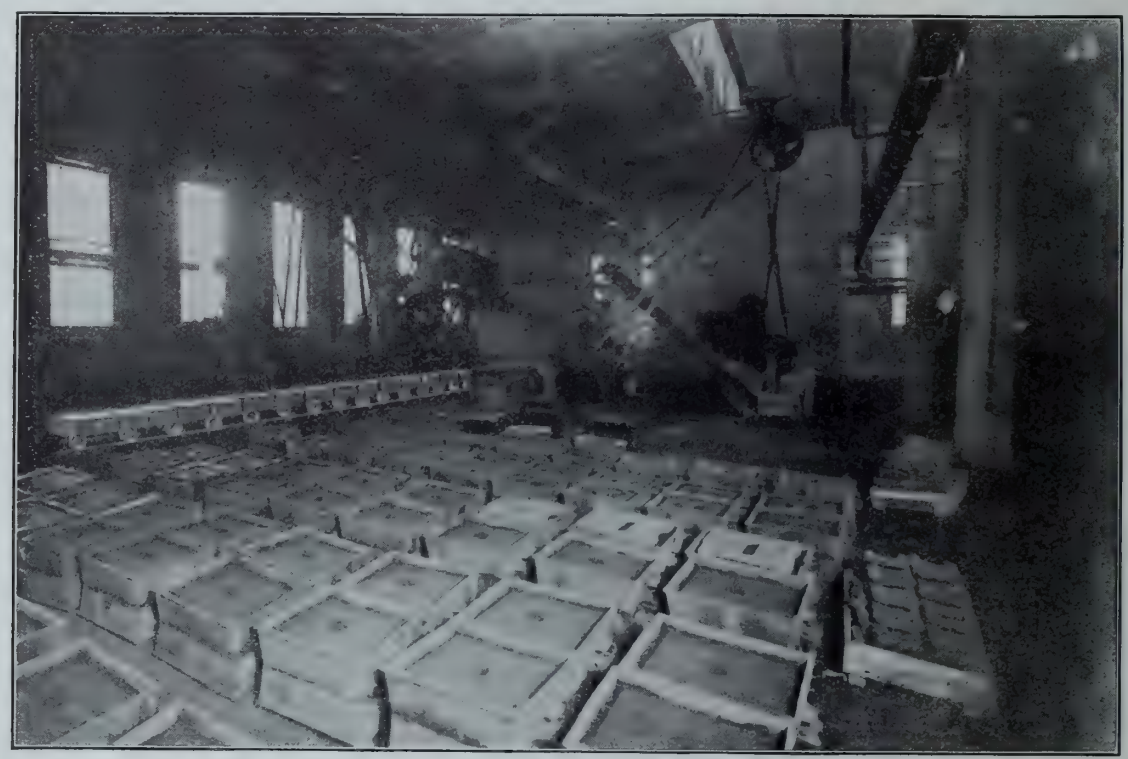
course by the bottom board supported upon the ram, which is forced down, thereby ramming the sand. At the instant of ramming, the vibrator is automatically thrown into action, which makes impossible the formation of any vacuum, and also prevents the sand from adhering to the pattern. The lifting pins then raise the flask off the pattern. While the flask returns to receive its supply of sand, the bottom board is supported by suitable hooks, but as the ram comes down, these hooks are drawn back so that the board remains upon the mould. All the operator has to do is to lift off the flask and set it to one side, blow the sand from the table with the air hose, and all is ready for placing the other half of the mould. The attendant may economize time at this point by placing the second half of the flask upon the machine, and throwing the starting lever before removing the half mould already completed from the bench. By the time he has removed the finished half-mould to the floor, the second half mould will also be completed, and will be ready to be lifted off. When using snap flasks and making light moulds, the mould may be assembled at the side of the machine, thereby making necessary but one trip to the floor. In such case, the moulder can have two sets of flasks, and arrange it so that the machine will be ramming the drag for the second mould while he is carrying the first to the floor.

The pressure of the ram upon the sand can be quickly adjusted, and as the flasks are filled automatically, every flask will be rammed alike. It is also possible to adjust the boards in such a way that the drag will be rammed harder than the cope. When making the cope, the machine is so arranged that it cuts the sprue. The pattern plates are placed in an ordinary table, or platen, at the front of the machine, and can be changed easily and quickly by removing four screws which hold the plate in position, and slipping in the new plate. One of the features is the heating of the pattern plates by gas jets from beneath, so that the moulds araw readily, without the use of any parting material whatever. By this method, with the proper grade of moulding sands, very fine work is made possible without any facing. Moreover, since no parting sand is introduced, the life of the moulding sand is greatly increased.

Eight hand squeezing machines each with a capacity of 150 moulds a day and two stripping plate machines each with a capacity of 150 moulds a day built by the company are also part of the equipment.

The main feature and most noticeable in the foundry organization is the automatic apparatus for conveying the moulds from the two Berkshire machines to the casting floor and when the castings are made to return the sand and metal, the former to a special mixing hopper and the latter to the cleaning room. The man working at the Berkshire machine can place the mould on the table of this automatic carrier, which runs the length of the foundry and which allows the mould to be taken off at whatever part of the floor they are required, as the conveyer is reversible. This allows the moulds on being poured to be placed thereon and taken back over the hopper where the casting is knocked out and falls off into a car running on a trolley underneath and delivered to the cleaning department. The sand falls through the rack into the hopper where augers feed it to an elevator by means of which it is carried to the sand mixer. This sand mixer thoroughly mixes the sand and delivers it back to the floor near the moulding machines.

The lower portion of the cupola is composed ol two sheet steel shells, the inner shell being made very heavy and of the same size as the stack proper,



Foundry, Showing Molding Machine and Conveyor.

the outer shell and encircles the inner one and is made air tight, forming the air chamber. In the outer shell are arranged two doors for shutters held in position by tap bolts, also made air tight, which may be removed and again replaced to allow for cleaning should any coke or slag accumulate in the air chamber, the air chamber is not fastened to the bottom plate, but is separate and distinct. Opposite each tuyere also is a sliding air tight gate with peephole. The tuyeres are so arranged that the blast is distributed over the entire area of the combustion chamber and are constructed in such form that the melted iron in its downward course cannot pass through them into the air chamber. The capacity of this cupola is

about 15 tons an hour and a cast is made every day.

The raw material is delivered from the Canadian Pacific Railway siding to the door of the cupola room where it is transferred to an electrically operated elevator which lifts it to the charging floor.

The cores are made on the second floor of the core room, which is really a separate building adjacent to the foundry. When made the cores are let down on a dummy elevator to the first floor, where they are baked and stored.

The castings, which are transported from the foundry by means of a trolley car, on being delivered from the automatic carrier are taken to the cleaning room adjacent. They are here cleaned in tumbling mills, which have a dust arrester attachment, which keeps the cleaning room free from dust and dirt.

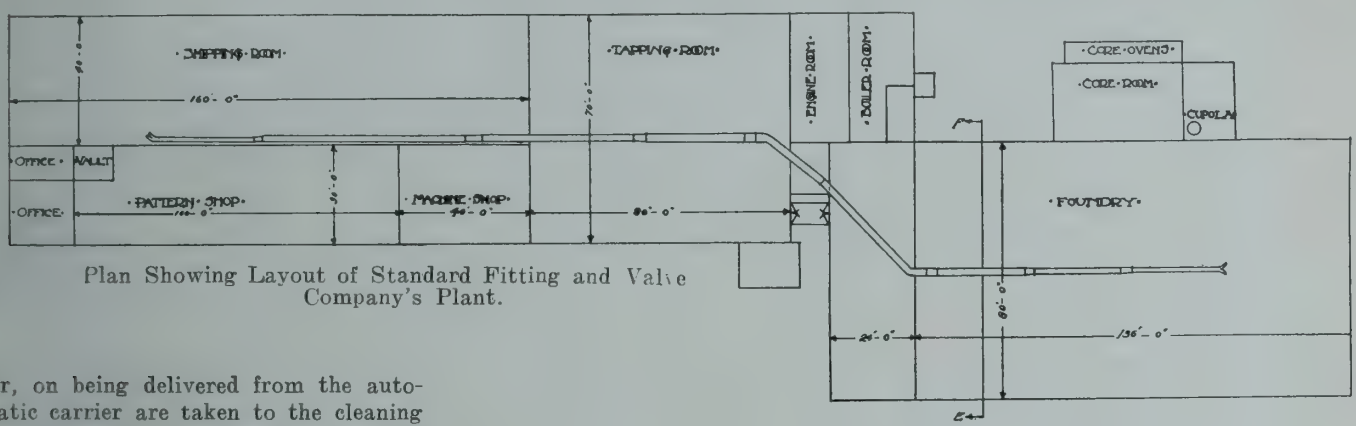
After cleaning, the castings are given any necessary grinding, whence they are taken by trolley to the tapping department and delivered to the tapping machines. On being tapped in one of the many machines for this purpose in the tapping room they are conveyed in a special metal tank to the cleaning tub. This tub is set in the floor, situated immediately over which is an air hoist. The tank mentioned, which is conveyed on a trolley, passes the various machines and collects the fittings from them in a perforated iron bucket. On being brought to the tub the air hoist lowers it into the cleaning bath where the now finished product is thoroughly cleaned. By trolley it is again taken to the stock and shipping room where the fittings are sorted and placed in their respective compartments.

One of the largest machines in the tapping room is for tapping threads four to eight inches. A notable machine is one known as the Walters three-way machine, which is the only one of its kind in existence, being built especially for the Standard Fitting & Valve Co. The taps, tees two inches and under all three ways at once. It is provided with a double chuck so that the operator may be taking out a tap tee and placing in a new one while the other is being tapped. It is entirely automatic, the lines of the fittings tapped by this machine are absolutely true when done in this machine, as the taps themselves are so adjusted as to render non-alignment impossible. The machine reverses itself and taps are withdrawn automatically, one starting after the other so that the strain on reverse does not come on one machine all at once.

Acme bolt cutting machines are used for cutting plugs and bushing. Flange unions are faced on a lathe and screwed on arbors so that the facing is absolutely true with the thread cut. The tapping of bushings is done on a four spindle tapping machine that works automatically.

The tool room machinery includes planers, shapers, milling machines, lathes and drill press and also pattern making equipment for both wood and metal patterns.

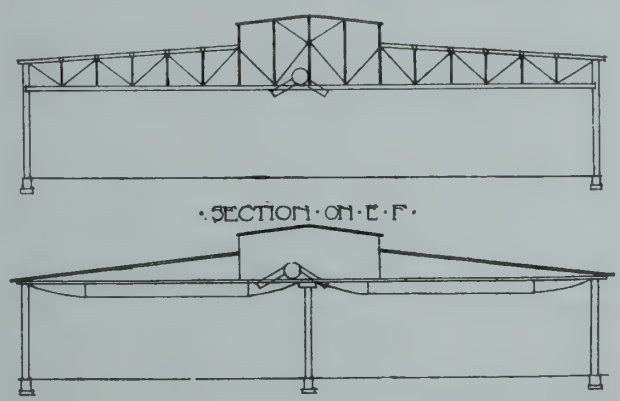
The stock room, which is a large airy department has the entire walls lined with bins to the ceiling. Each bin is 3 feet deep and 2 feet square. There are 1,000 of these bins in all. Half way to the ceiling all the way around is a platform to enable a man to reach the upper tier of bins. A Fairbanks standard scale is situated in the centre of this room. Running the entire length of the stock room is a platform from which cars may be directly loaded as the arrangement is such that the company's siding parallels the stock room.



Plan Showing Layout of Standard Fitting and Valve Company's Plant.

Power House.

The power house is equipped with a Goldie-Corliss engine of 150 h.p. of similar design to that installed in the power plant of MacGregor-Gourlay Co., Galt. The fly-wheel is 14 inches in diameter with a 20 inch belt. The boiler is of 150 h.p. at 120 pounds pressure. The lighting equipment consists of a 50 h.p. generator. It supplies power for the motors, for the blower and elevator and the electric lighting of the entire plant, which consists of Nernst lamps. The ventilating and heating system is by the Dominion Heating & Ventilating, Hespeler, and includes a system of heating the entire building, except the office, by forced draught. The fan is driven by a steam engine, 12 h.p., 250 r.p.m. An air compressor is also installed for supplying power to the various compartments where compressed air is used.



Sectional View of Plant.

Competitive plans are invited for a new Collegiate Institute to be erected in Port Arthur. The building will cost $60,000, allowing $15,000 for heating, plumbing, ventilation and equipment.

Data on Steam Heating for Small Buildings.

The committee decided to divide the work of collecting data into divisions, as follows:

The boiler, from the manufacturer's viewpoint and from the viewpoint of the engineer who purchased it for instalation, the figuring of radiation for loss of heat, and the practice for instalation of flow and return pipes.

Inquiry among the manufacturers shows that a good deal of progress has been made toward standardizing, but that a good deal yet remains to be done. The size of grate for a given size boiler, or the proportion of grate surface to the capacity of the boiler, varies so much that inquiry was made on this point, and no satisfaction could be obtained, but a comparison of six of the leading sectional types is here made to show the proportion in this respect.

Grate Surface and Ratings in Six Heating Boilers.

Boiler.	A.	B.	C.	D.	E.	F.
Rated capacity	800	800	775	750	750	750
Sq. in. of grate	616	740	648	528	630	648
Ratio of grate to 100 ft. of capacity	77	92.5	83.6	70.4	84	86.2

The question of how much coal should or could be burned per square foot of grate does not appear to have been considered by many of the makers, and your committee could only learn of three manufacturers who had done anything to determine how much coal should be burned per square foot of grate in small boilers.

If we take a boiler of 800 sq. ft. of steam radiator capacity it will have to transmit 216,000 b.t.u., assuming that each square foot of radiation gives off 270 b.t.u. per square foor per hour. If we assume that 10,000 b.t.u. is the thermal value of a pound of anthracite coal that can be usefully transmitted in a house heating plant we must burn 21.6 lb. of coal per hour when the heater is running at its maximum capacity, and for a boiler of 750 ft. we would burn 20.25 lb. of coal. This gives a rate of combustion of 5.1 lb. per square foot for boiler A, 4.2 lb. for B, 4.65 lb. for C, 5.63 lb. for D, 4.4 lb. for E, and 4.5 lb. for F. This variation is so great that it would seem that the manuafacturers have not yet adopted a standard.

Boiler Heating Surface.

The question of heating surface in a boiler seems to be an unknown quantity and inquiry among the manufacturers does not produce much information on the subject. Some of the makers have experimented to determine the amount of heat transmitted per square foot of boiler surface, but your committee could not ascertain that any data were gathered as a result of such tests. Your committee did see some calculated data on this subject, but could not ascertain that any one used it or was guided by it. The proportion of fire surface to flue surface has had some attention from the manufacturers, but no definite proportion is stated except by one maker, who claims 60 per cent. of fire surface and 40 per cent. of flue surface.

Very few manufacturers give the amount of heating surface in small boilers, nor do they give any rule by which their boilers can be measured. For the purpose of getting information from the various engineers who make a business of installing small heating plants, a series of questions was sent to members of the society and others. The committee did not depend entirely on these question blanks, but inquired personally, in different parts of the country, with a view to gathering information.

To the question, "Do you depend on manufacturers' rating?" 89 per cent. of the replies are "Yes," 7 per cent. reply "No," and 4 per cent. "Not without checking."

To the question, "What percentage do you add to the radiation to provide for loss by boiler and piping?" 70 per cent. of the replies say "25 per cent. should be added"; 10 per cent. reply, "30 per cent. should be added"; 10 per cent. say, "18 per cent. should be added," and 10 per cent. reply that they figure the actual amount of the loss, and so add it to the radiation.

To the question, "What additional do you figure as a factor of safety" 70 per cer cent. reply, "25 per cent."; 10 per cent. reply, "30 per cent."; 10 per cent, "15 per cent.," and 10 per cent. reply, "10 per cent."

To the question, "Do you consider grate surface a factor in sizing up the boiler?" 80 per cent. reply "Yes." and 20 per cent. reply "No."

To the question, "How many inches of grate do you figure to 100 sq. ft. of surface?" very little could be learned, and nearly all replies to the questions left this blank.

To the question, "Do you consider the shape a factor?" 82 per cent. reply "Yes," and 18 per cent., "No." Some preferred round firepots, and some square or oblong, but not enough information could be gathered to put these into exact percentages.

To the question, "Do you examine the chimney of a building to determine the draft you will get?" 90 per cent. reply "Yes," and 10 per cent. reply "No." Inquiry on this point shows that the examination is made only as to its size, and to see that it is properly built, and that no other stove or heater goes into the same flue. The committee could not learn that any attempt was made to test chimney flues for velocity by any one engaged in the work of erecting small steam plants.

To the question: "Do you figure on any rate of combustion per square foot of grate per hour?" 86 per cent. reply "No," 14 per cent. give rates of combustion of 5 lb., 7 lb. and 8 lb. per square foot of grate per hour. The committee does not consider the high rates of 7 or 8 lb. should be taken as reliable in such small plants.

To the question: "What steam pressure do you figure on as a basis?" 60 per cent. reply 2 lb., 20 per cent. reply 3 lb., 10 per cent. reply 5 lb., 10 per cent., reply 1 lb.

Questions on Figuring Radiation.

In answering these questions most of the replies state that they use some standard rule, and the following are mentioned quite freely: Baldwin, Mills, Carpenter, Snow and Wolff. The committee received very few replies that indicated the cubical contents only of a building were figured on. The replies indicated that all northern rooms were provided with 10 per cent. or 15 per cent. extra radiation.

Answers in regard to indirect radiation: 86 per cent. added 50 to 60 per cent. to the direct radiation which would be needed for the same room; 14 per cent. of the replies figured on the exact amount needed to provide for the air changes. No answers were received nor information obtained that could be tabulated in regard to the best type of radiator to be used. The trade seemed to give them all about the same value.

Flow and Return Pipes.

In the answers received on this subject none of the questions was replied to, but a large number of replies were received to the question: "How large a main pipe should be used for 1000 ft. of radiation?" None were less than 3 in., some were 3½ in. and a few 4 in., showing uniform practice within a reasonable range.

Your committee found that nearly all work of installing small steam heating plants was done under what is classed as competition work; and the engineering features of such installations have been reduced to what might be called rule of thumb practice, guided by experience.

The fact that a very large number of plants are installed each year and give excellent results would indicate that the art has made good progress.

Your committee regrets that more data could not be collected, so as to give more detailed information as to

the practice in all the States, but it is extremely difficult to get replies to questions sent by mail, and the committee has submitted all it could collect. The information obtained was from the following States: Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, Ohio, Illinois, Indiana, Minnesota, Wisconsin, Montana, Washington,, California, Missouri and Colorado, and it was obtained mostly from people actually engaged in the construction of such plants. The committee did not consider it part of their work to take data from standard works that can be referred to at any time, but rather to secure all possible information from parties engaged in the business.

Remuneration for Figuring Contracts

A Writer in the Metal Worker Describes a Workable System for Remunerating Plumbers for the Trouble of Giving Estimates on Contract Work.

A plan which works, and which is claimed does not run counter to the legal enactments, has been successfully tried. It will obtain pay for the plumber in figuring contracts, and, what is more to the point, looked at from a moral standpoint, does not stifle competition, but leaves it as free and open as before. The plumbing fraternity as a whole has been grossly libeled by newspapers and others, and the examples of abuse of associations for personal ends have been few when the vast number of associations is borne in mind. More than this, any association which tries to make the association bring the members unwarranted profits is treading on dangerous ground, and not only from a legal standpoint, but even if no legal action is taken against them the community in which they live will probably become wise to the fact, and the last condition will be worse than the first.

The scheme which we use is, briefly, that each plumber after figuring his job and adding the percentage of profit which he thinks just and fair, adds a further specified charge according to the amount of the contract involved in order to allow for figuring the work. This can, perhaps, be better understood by the following paragraph from the by-laws:

Extract From By-laws.

"A contract shall be defined as work done and material furnished at a predetermined specified figure.

"No contract shall be made for an amount less than $25. Every member shall add to the amount of his bid for materials, wages and such profit as he deems just to himself, a fixed sum for the labor of making the estimate according to the following schedule:

Contracts between $25 and $50, $3.

Contracts between $50 and $100, $5.

Contracts between $100 and $200, $8.

Contracts between $200 and $300, $10.

Contracts between $300 and $400, $12.50.

Contracts between $400 and $500, $15.

Contracts between $500 and $1,000, $17.50.

Contracts between $1,000 and $2,000, 2½ per cent. on the even hundred next below the contract figure.

Contracts between $2,000 and $5,000, 2 per cent. on the next even hundred below the contract figure."

The way it works in actual practice is that each man after he has figured a contract enters on a book the date, the name of the architect or the street and number of the house and the customer, as well as the work done. For the time being he leaves one column blank, and if he secures the contract he places in this column the figuring charge. This is shown in the accompanying tabulation, and indicates that the plumber figured a contract for each of the first five days in June. He lost four jobs and secured one. This is the one that he figured on the third, and the figuring charge was $22.50, indicating that the amount of money involved was between $1,000 and $1,100. At the end of the month these slips are handed to the secretary of the association, who makes a record of the different contracts and the amount figured on each one, as is shown in the accompanying blank. He then divides up the $22.50 among the bidders, the successful one sharing as well as the others. The successful plumber pays the secretary the amount when he receives pay for the work done, and then it is divided among the bidders.

This is a brief outline of the scheme, and the reason I believe that there is nothing illegal is that it does not stifle competition; no man knows the amount of another's bid within $100, and the ones sharing in the proceeds are those who have actually done work on the job, for figuring a contract is just as much of a fixed charge on work as permits are. In explanation of this scheme I would say that among the objections raised against it is the fact that some small plumber may attempt to figure on every job that comes along, putting his estimate high in the hopes of not getting the job, but sharing in the pay for figuring the contract. In practice this is not so, for architects rarely peddle bids out to more than four or five men anyway and should such a scheme as this become general it would soon reduce the amount of each bidder's share.

It helps the association in that it keeps the men together. The men come out every meeting night to learn of the bidders on the contract and to figure up what their share in the proceeds will be. It protects the plumber in that it helps him to collect his bills, for until a man has paid in the bid charge it indicates that he has not received the pay on his job, and plumbers will be wary of working for a customer until the old bills are paid. One thing which this contract does not provide, and that is for outside men coming into your own city and figuring on work. Should the outside man get the job the plumbers who figured on the work will not receive any pay for their bidding. This, however, is so infrequent that I do not believe it amounts to much. Outside contractors have to pay their men practically the same as we do in this city, and, moreover, they have to board them and have their railroad fares taken into consideration. In these days of sharp competition I believe when an outside bidder gets a contract that there is something wrong with the local plumbers, or else, as more often happens, he is losing money on the job.

I thoroughly believe in this scheme myself, and I would like to see its wider adoption, but from my own standpoint would like to hear suggestions from other association men who perhaps have improvements and who could suggest desirable changes.

Blank for Figuring Share of Bids.

Date .....
Contract .....
Successful bidder .....
Bidder .....
Bidder .....
Bidder .....
Bidder .....
Cost of figuring .....
Bidders .....
Share of each .....

Page From Plumber's Contract Book.

Date.	Architect's name or street and number.	Customer	Work	Amount
6-1	James Smith	J. F. Rogers	Plb.	.....
6-2	James Smith	J. F. Rogers	Plb.	.....
6-3	12 North 17th St.	H. L. Ingersoll	Heating	$22.50
6-4	J. D. Jones	M. L. Fisk	Heating	.....
6-5	J. D. Jones	M. L. Fisk	Heating	.....

NEWS OF THE TRADE IN CANADA

The Wise Electric Co., Montreal, has been registered.

B. L. Cox, tinsmith and plumber, Kentville, N.S., has assigned.

Plumbers and steamfitters are now at work in the new school building at Paris.

H. W. Anthes, president of the Toronto Foundry Co., is spending the winter in Florida.

The premises of W. M. Shepherd, plumber and well borer, Berwick, N.S., were burned recently.

S. P. Gourlay, plumber, St. Catharines, is opening a branch shop at Welland. Fred. Gourlay will be manager.

E. M. Keeling, Ottawa, having purchased the stock of Keeling & Co., electricians, the firm name is now E. M. Keeling & Co.

Hamilton & Stott, plumbers, St. Thomas, have purchased some vacant land there and will erect a modern fireproof building on the site.

L. L. Anthes, president of the American Foundrymen's Association, attended the meeting of the executive of that body at Cincinnati recently.

The plumbers and tinsmiths of Galt are all busy, and a visit to the different establishments demonstrated the fact that there was no lack of work.

W. B. Chambers, Welland, has the following plumbing contracts: Two new houses for John Goodwillie, J. H. Burgar's new house, and A. W. Fritz's residence.

The sheriff is in possession of the business premises of H. J. Griffith, the Welland plumber who suddenly left his native town owing to a number of creditors.

During the recent cold snap at Halifax the plumbers were kept pretty busy thawing and repairing water pipes. In plumbing lines generally business has been fairly brisk.

Jos. Barrette, Alphonse Beaulieu and Edmond Brosseau, Montreal, have formed a copartnership in Montreal and have registered as J. Barrette & Cie, to carry on a plumbing business.

J. H. Barrett, who has been in the employ of Werner Bros., tinsmiths and plumbers, Mitchell, Ont., for the past two years, has accepted the management of a similar business at Kincardine.

Adamson & Dobbin, Peterboro, installed the heating system in the new Margaret Cox Home for Girls in that city. It is the old Barnardo Home improved and enlarged, a gift from Hon. Geo. A. Cox.

A. J. Jackson, Ontario representative of the Amherst Foundry Co., is making extensive alterations to his premises at 178-180 Victoria Street, Toronto, and will have very fine show rooms when completed.

The "Sanitary Association of Winnipeg" is the name of a public body recently formed in that city to assist in promoting the health of the city by working for better sanitation. Among the matters proposed to be taken up is one for a better system of plumbing in that city.

Macgregor & Reid, contracting plumbers and electricians, Peterboro, gave their employees a supper on the evening of February 10. This interesting event was given as a fitting finale to the heavy work in connection with their removal to new premises, after a prosperous year's business.

Cluff Bros., Toronto, announce that they have not discontinued jobbing soil pipe and fittings but have merely decided to fill the bulk of their orders direct from the foundry, a plan which ought to mean a considerable saving in the expense of handling goods on which the margin is very small.

A. F. Falls, who has been connected with the brass plant of Somervilles, Limited, Toronto, for some time, has been appointed manager of both the brass works and the plumbing supply business at Richmond and Church Streets, Toronto, succeeding W. A. Porter, for many years with the company.

Though recent sudden changes in weather have caused a number of "freeze ups" and have kept Guelph plumbers busy making money, Harry Mahoney has found time enough to indulge in his favorite pastime, curling. He was skip of the team that won District No. 7 for the Ontario tankard the other day, in the big tourney at Stratford.

At the second of the series of technical lectures organized by the Montreal Union, No. 144, of the United Association of Journeymen Plumbers, Gas Fitters, Steam Fitters and Steam Fitters' Helpers, J. W. Hughes delivered a lecture on "The Ethics of Plumbing." There was a large attendance. It was announced that Mr. Hughes would deliver several more lectures. It has been decided to bring the subject matter of each lecture up for discussion at the regular weekly meeting of the local union.

The Canadian Electrical Heater Company has been organized in London to manufacture electrical heating appliances of all kinds. They have secured premises in the London Brass Company's building, and are now putting in the necessary machinery. They will make electric ovens, radiators, chafing dishes, glue pots, soldering irons, water heaters, car heaters, etc., but will make a specialty of electric irons. These will be made in twenty different sizes and weights, ranging from three to thirty pounds, to suit all purposes.

Jas. Sinclair, who has been engaged in the tinsmithing, plumbing and stove business at Ingersoll for many years, has been re-appointed chairman of the Board of Health there. This is the nineteenth consecutive time that this honor has been conferred upon Mr. Sinclair, and it is a distinction which it is doubtful if anyone has ever enjoyed before. During his long tenure of office Mr. Sinclair has been an energetic and capable officer and has always taken a lively interest in all matters pertaining to the health of the town.

Hamilton & Stott, plumbers, St. Thomas, have recently installed the following heating plants: St. Joseph's Convent; D. Meadows' residence; Irvine McNiece, residence; Dr. McLarty, residence; F. M. Griffin, residence; Fred. Sutherland, residence; Dr. Fitzimmons, residence; Archie Berdan, residence; R. McLachlin, Glencoe; J. Hurst, Glencoe; Mr. Bechley, Horton Street. This firm has also installed a large number of hot air heating plants. They make their own plans and specifications for the hot water, steam and hot air heating plants.

The fourth annual report of W. B. Garvock, building superintendent for the Ottawa Public School Board, contains a number of interesting figures. A feature of the report is the part dealing with the up-to-date heating and ventilation. The school room in the town hall, Ottawa East, and the Kindergarten room in Ottawa South are heated by furnace; the Orphans' Home by hot water; the Hopewell Avenue school rooms with hot air furnace and stoves, and all the others by steam. Seven schools have the modern mechanical system of ventilation: Cambridge, Cartier, Elgin, First Avenue, Glashan, Osgoode and Percy Street.

A heating apparatus has been recently put in the Methodist Academy, Carbonear, Nfld., by which the whole building will be heated—the four school rooms, assembly room, hallways, kitchen, parlor, library, secretary's room, and two class rooms. The apparatus is a Kelsey Twin Generator, the first of the make to be used in that island. It is a hot-air system, with a 2½ h.p. electric motor to force the heated air through the piping, the apparatus being so designed that the foul gas is driven out and pure air from the outside is drawn in—thus giving a thorough ventilating process. The necessary piping, some 500 feet of 9 to 18 inch, of galvanized tubes, was constructed by C. L. Kennedy, Harbor

Grace, and the work of installing the plant was also done by him.

The newly-constituted Chatham Board of Water Commissioners a few days ago enacted a new ruling relative to meters which will be of considerable interest to the plumbing fraternity. All factories, hotels, livery and feed stables and laundries must, on or before June 1, be put on a meter basis. Manufacturers will, as a result, pay according to water used; while factories now enjoying free water to a certain amount will be charged meter rates for all that is used above the specified amount. Manufacturers are talking of holding a meeting to protest against the new ruling, which will in some cases involve, it is said, the expenditure of $200 on meters. It is claimed by the commissioners that bad plumbing is to blame for many high water bills. Commissioner Sheldon thought that an inspector should be appointed to inspect and pass upon every new job.

Early in January Vancouver experienced some weather that the householder would call "the plumbers' delight." It came with a rush and all the first week the thermometer was close to zero. The result has been that numerous water services were frozen up and plumbers have been kept very busy trying to bring relief to the people affected. It is not realized just how much water is necessary to metropolitan life until something of this kind happens. It is even more so than in those sections where the proverb is quoted, "You never miss the water till the well runs dry." The plumbers, however, do not relish this rush of business. Not that they do not mind making a little money but the larger firms especially are busy with contracts and they were busy anyway. Frozen pipes mean that contract work must be set aside for the time being.

EXAMINATION REQUIRED.

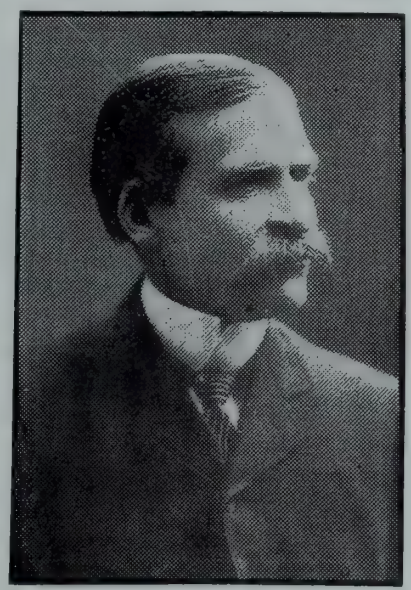
The new plumbing law lately passed at Lorain, O., provides that plumbers must pass an examination. The ordinance creates a board of plumbing examiners which shall consist of the health officer, who shall be an ex-officio member, and three practical plumbers.

All applicants shall be examined as to their practical and theoretical knowledge of plumbing and of the plumbing laws and regulations of the city. The board shall certify the names of those who pass the examinations to the city auditor, who shall issue the license.

The penalty for violation of the ordinance is a fine of not less than $5 nor more than $100, or not more than six months' imprisonment. In addition, a license may be revoked at any time, for cause, after a proper hearing before the board. Any plumber may have the right to appeal from the decision of the board to the Mayor, but the Mayor's decision shall be final.

KING RADIATOR CO. STRENGTHENS.

It has been known for some time that the King Radiator Company, Toronto, have been strengthening their organization with the intention of enlarging their manufacturing capacity. Matters have come to a head and it is now definitely announced for the first time that arrangements have been made to enlarge their Board of Directors by the addition of three of the most successful business men in Ontario, these being Thomas Southworth, Director of Colonization for the Ontario Government, who has resigned his position to become secretary of the King Company. M. J. O'Brien, well known as a railway



THOMAS SOUTHWORTH,

The new Secretary-Treasurer of the King Radiator Co.

contractor, of Renfrew, and mine owner at Cobalt; and R. Y. Eaton, vice-president of the T. Eaton Company, Toronto.

Mr. Southworth, who will be actively connected with the company in future, was formerly associated with Hon. Geo. P. Graham, Minister of Railways and Canals, in the newspaper business at Brockville, but for the past 13 years has held high executive positions for the Ontario Government.

Considerable additional equipment has already been installed at the plant in order to make its line of radiators complete for every use, and to handle an increased volume of business. The company's plant was described in the Plumber and Steamfitter of November 2.

INDESTRUCTIBLE LAVATORY GOODS.

The Canadian H. W. Johns-Manville Co., Toronto, is making an indestructible line of indurated fibre tanks, seats and covers for closets and lavatories. These "J-M" seats and tanks are claimed to be stronger and more durable than wood, and just as light in weight. Being moulded in one piece there are no joints to separate or become unglued; nor can heat, moisture or urine affect the material of which they are made. They are warranted not to crack or split, and being hard, smooth and non-absorbent, with no crevices to hold dirt, are, therefore, sanitary. The tanks are waterproof without the copper lining usual in the ordinary tank, and are thus not liable to corrode or leak. The fibre does not warp, swell or shrink, and cannot throw the fittings out of adjustment.

A TINSMITH DID THE TRICK.

A woman who had entered a hardware store in Toronto the other day with two children had a rather awkward experience. While she was being waited on one of the children placed a granite chamber pot on his head, pulling it down over his face. When, however, he tried to remove it his best efforts were in vain. Neither mother nor clerk were any more successful. In her desperation the now weeping mother took a street car and, amid the laughter of the passengers, hurried the child off to the family doctor, but the latter, never before having had a patient of this description, also failed to remove the offending utensil. Finally a tinsmith was suggested, and he, by the aid of sundry tools, succeeded where others had failed.

HOME-MADE FIRE EXTINGUISHER.

An inexpensive fire extinguisher may be made by taking twenty parts of common lime; salt, five parts, and water, seventy-five parts. Mix well and put in thin bottles. In case of fire a bottle should be thrown so that it will break in or near the fire, when the gases liberated from the water, salt and lime solution will put it out. This mixture is said to be better and cheaper than that used in many of the high-priced fire extinguishers installed for fire protection.

The contract for the erection of a new land titles office at Saskatoon has been let to Smith Bros. & Wilson, of Moose Jaw. The contract price was $26,700. Work will commence early this year.

CONTRACTS AND BUSINESS OPPORTUNITIES

Municipal Undertakings.

Brantford will extend its sewerage system.

Plans for the proposed filtration plant at Toronto are now ready.

Sarnia is considering instaling a civic steam heating plant.

Winnipeg will start work at once upon the construction of a $65,000 sewer.

Victoria has secured $1,200,000 with which to instal a new water system.

Point Grey, a suburb of Vancouver, proposes to introduce a water and sewerage system.

Etobicoke Township, Ontario, asks power to start a sewage disposal plant at New Toronto.

The Hull waterworks are to be extended. New hydraulic pumps will be installed and a new main laid.

City Engineer Ruttan, of Winnipeg, recommends a new softening plant for the waterworks at a cost of $150,000.

The by-law to establish a waterworks system in Aylmer resulted in the ratepayers deciding to undertake the improvement.

J. H. Taylor, City Clerk, states that a vote on the question of constructing water works will soon be taken at Weston, Ont.

Price Ellison has offered to put in a water system at Vernon, B.C., for $35,000, which will give unlimited water and reduce electric light rates.

Plans will be prepared by City Engineer Ruttan for the construction at Winnipeg of a trunk sewer for the district west of the Red river.

The tender of Bissett & Louchs for the supply of 543 tons of water pipe at $38.59½ a ton has been accepted by the Winnipeg Board of Control.

Work is to be commenced at once on a system of waterworks at Clinton, Ont. An engineer will shortly be appointed and contracts awarded.

Construction work on the central section of Revelstoke's, B.C., sewerage system will be done by T. F. Sinclair. Work will commence on April 1.

Two money by-laws were passed by Victoria ratepayers recently, one for school work at a cost of $65,000, and the other for sewers, to cost $50,000.

The G.T.P. are installing a new water system in Prince Rupert, the old plant having been found inadequate. A reservoir of 50,000 gallons capacity will be erected.

Mr. Fellowes, Toronto's waterworks engineer, states that in order to provide proper water supply for East Toronto it will be necessary to extend the city's high level system.

Vancouver's waterworks construction work for 1909 includes the building of the Little Mountain reservoir and its connection with the city system by the construction of five miles of mains.

City Engineer Rust, of Toronto, has recommended that J. D. Watson, Birmingham, England, and Rudolph Hering, New York, be engaged to make a report on the whole problem of sewage disposal for Toronto.

Montcalm is the new name for Notre Dame de Quebec and lies immediately west of Quebec. Its whole system of waterworks, mains and distribution pipes has been finished lately, at the cost of about $120,000.

Tenders will probably be received about April 1 for the proposed septic tanks for city sewage at St. Thomas, for which the citizens on Jan. 4 voted to issue $40,000 bonds.

Col. Tracey, of Vancouver, has completed the plans for a new sewerage system for Revelstoke, B.C., which will cost $100,000. Only the central portion will be constructed at present, the others to be installed as necessity may require.

Toronto City Engineer has recommened extensions of water mains on Colma Ave., Dupont Street and Lucas Street and Binscarth Road, and has recommended that a sewer be laid on Grace Street.

Better progress has been made recently on the tunnel which will convey the water from Loch Lomond to Fort William, a distance of six miles, from an elevation of 350 feet. At the end of January out of a total length of tunnel of over 5,000 feet, only 540 feet remained to be completed, and the work is progressing at the rate of about 110 feet per month, with air drills working at both ends.

One of the schemes that the Toronto Board of Control will consider the early part of this year is the construction of a system of overflow sewers for the city, and City Engineer Rust has been instructed by the controllers to prepare a report. It is estimated that the cost of the work will be in the neighborhood of three-quarters of a million dollars.

An unexpected move in the direction of municipal ownership was made at a recent meeting of the Chatham city council, when Ald. Brackin put through a resolution authorizing Mayor Westman to consult the city solicitor with reference to the feasibility of expropriating the plant of the Chatham Gas and Electric Light Company. The civic lighting plant furnishes street lights, while the private company looks after the incandescent field.

The town council of Notre Dame de Grace decided to purchase the property of the company which supplies water to the municipality. Henry Miles is the seller of this property, and the price named is $292,000. The supply of water is taken from Lake St. Louis, and the power house is situated at Lachine, south of the canal. The pumps furnish 1,500 gallons per minute and supply not only the municipality of Notre Dame de Grace, but also Montreal West and St. Pierre.

J. O. Poland, Pittsburg, general inspector for the Dominion Natural Gas Co., is in Galt for a couple of weeks, making a thorough investigation of the system in that city. Recent disastrous explosions have stirred the company to action, and the inspector is taking drastic measures. All connections at all faulty are ordered taken out and replaced correctly. The use of rubber tubes as extensions is also condemned, the latter being thought to be responsible for a number of explosions.

Willis Chipman, C.E., Toronto, has reported to the Weston Town Council in reference to the establishment of a system of waterworks. Mr. Chipman recommends an expenditure of $57,000 on the installation of a system the source of supply to be the Humber River, the water of which is to be pumped into sedimentation basins, thence through mechanical filters and on to a supply tank to be erected at the north end of the village, with a capacity of 100,000 gallons.

The Guelph waterworks commissioners have handed over to the municipality a cheque for $17,000, which is a part of the earnings for 1908. At a cost of $125,000, an almost entirely new system of waterworks will be completed in a few days. It includes an addition to the pumping house, with two new powerful pumps and a 24-inch pipe line laid to a number of springs five miles out. A concrete reservoir, with a capacity of half a million gallons and a hundred foot standpipe of the same capacity, on the highest elevation in the city, are also features of the new system.

General Building Notes.

J. Stevens & Son will erect a $10,000 warehouse at Toronto.

The I.O.O.F. talk of erecting a large solid brick building at Guelph.

The Standard Chemical Works will erect a large office building at Toronto.

A $6,000 public school will be built at Wilkie, Sask.

D. T. Symons will erect a dwelling at Toronto to cost $11,000.

The I.O.O.F. contemplate the erection of a large solid brick building at Guelph.

J. D. MacArthur, Winnipeg, will erect a magnificent office building in the near future.

The Imperial Storage and Cartage Co. will build a $20,000 storage warehouse at Toronto.

The London Loan Co. have let a contract for the erection of a three-storey office building at London.

Architect Dodd is preparing plans for a three-storey block to be erected at Lethbridge in the spring.

Architect MacDonald is preparing plans for a two-storey business block for Bowman & Johnstone, Lethbridge.

The Bank of Commerce recently bought two lots at Lethbridge, Alta., and will erect a fine bank building this year.

J. A. Turner, Guelph, who has erected nine houses in one block during the past year, contemplates erecting a block of five more.

Building operations at Prince Albert will be active this year. R. T. Goodfellow is erecting a new business block; T. Baker will build a block of stores; the Imperial Bank will put up a new building ing, and D. Agnew, A. Holmes and G. W. Baker are erecting new stores.

Public Buildings.

A new registry office will be built at Welland.

Point Grey, B.C., will erect a municipal hall.

Calgary Presbyterians will build a new $7,000 church.

A new church will be erected at Lakeview, near St. Thomas.

A new $4,600 school will be built at Yarmouth Heights, near St. Thomas.

Beaverton and Thorah councils will erect a joint town hall to cost $12,000.

The new $200,000 Collegiate Institute proposed for Winnipeg will be built this year.

It is probable that a new immigration hall will be built at Saskatoon this year.

St. Matthew's Anglican congregation, Brandon, will erect a new and larger church.

The erection of a new Roman Catholic church in South London is contemplated.

A new Roman Catholic Church will be erected at Palmerston, Ont., in the spring.

Two new wings to cost $70,000 will be added to the Home for Incurables at Toronto.

A new transportation building to cost $86,000 will be built on the Exhibition grounds, Toronto.

A new school house will be built at Centreville, N.B., to cost $7,000. Tenders are to be in by Feb. 8.

The Canadian Pacific Railway will rebuild their station at Bristol, N.B., at an estimated cost of about $3,000.

The congregation of Murray Street Baptist Church, Peterborough, are considering the erection of a new building.

The Wentworth County council have been notified that a House of Refuge must be erected before January 1st next.

Dr. Sheard, the Medical Health Officer for Toronto, is asking for $60,000 for the enlargement of the Isolation Hospital.

It is rumored that the G.T.R. are purchasing property in Hamilton with the view to the erection of an up-town station.

The Corporation Ecole Hautes Etudes have taken out a permit for the erection of a school at Montreal, at a cost of $240,000.

Tenders will be called immediately for the erection of the new Provincial Asylum for the Insane, to be erected at New Westminster.

The Toronto Exhibition directors have received plans for the construction of a new poultry building estimated to cost $26,000.

At a recent meeting of the Fernie, B.C., city council it was decided to take tenders at once for the erection of the new municipal buildings.

The Guelph Anti-Tuberculosis Society intend to build in or near Guelph a big sanitarium for the treatment of Wellington County consumptives.

Plans for the erection of a two-storey brick school building to be erected at Paddon's, near St. Thomas, at a cost of $4,600, have been accepted.

The Roman Catholic Church at Fort William has purchased a site on which will be erected a church and separate school for the western portion of that city.

It has been decided to erect a new school building in Chelsea Green, London South, early this spring. The building will cost in the neighborhood of $3,000.

It is expected that the work of constructing a new school in Ingersoll, to cost in the neighborhood of $10,000, will be commenced as soon as the frost is out of the ground in the spring.

Taylor & Taylor are drawing up plans for the proposed changes at the county court house at Brantford. A large amount of money will be spent in re-arranging the heating system, etc.

St. John, N.B., aldermen are considering the question of making extensive changes in the city hall, or of building a new structure. A committee has been appointed to look into the matter.

It is reported that the Sparrow Company will rebuild the Academy of Music at Montreal on another site if their present building is razed for the proposed extension to the S. Carsley Co.'s building.

The Hamilton Board of Education expects to build additions to two or three schools this year. The Separate School Board will make alterations to its schools at an estimated expenditure of $4,000.

Condensed or "Want" Ads.

DUPLICATING DEVICES.

IF INTERESTED in a Duplicating Machine for getting out circular letters, reports, price-lists, etc , or for printing various office forms, write for booklet and samples of work. The "POLYGRAPH" is the newest, latest and best, and sells for a lower price than the others. Is unexcelled by any similar device on the market. F.W. Tenney, Canadian Sales Agent. 123 Bay St., Room 116 Stair Building, Toronto, Canada. (tf)

MISCELLANEOUS.

ADDING TYPEWRITERS write, add or subtract in one operation. Elliott Fisher, Limited, 129 Bay Street, Toronto.

HIGH CLASS COLOR WORK.—Commercial stationery, posters. The Hough Lithographing Co. Limited. Office, No. 3 Jarvis Street, Toronto Telephone, Main 1576. Art, good workmanship business methods.

7,217 NATIONAL CASH REGISTERS were sold during May 1908. That's more than were sold during May 1907. The National Cash Register Co., F. E. Mutton, Canadian Manager, cor. Yonge Street and Wilton Avenue, Toronto.

NOTICE—Users of Pitner Gasoline Lamps are warned against being induced to purchase parts of other makes of lamps to be used on the Pitner. The most vital part of any lamp is its generator, and the Pitner generator has been granted a patent in Canada, the United States and other countries, on the principle of its improved method of generating gasoline vapour. Supplies and parts for the Pitner lamps can be received by return mail by applying to our representatives or direct to the PITNER LIGHTING CO., Limited, 36-38 Lombard St., Toronto, Ont. [tf]

SITUATION VACANT.

WESTERN jobbing house handling hot water, steam heating and plumbing supplies, wants an experienced travelling salesman of good address, able to make estimates and assist the trade in closing business. Applicants must state their experience as a salesman, age, references, etc. Address Box 797, PLUMBER AND STEAMFITTER, Toronto. [4]

REPRESENTATIVE WANTED.

WANTED in every town and village, a representative to take charge of the circulation of our various publications:—Hardware and Metal, Canadian Grocer, Financial Post, Plumber and Steamfitter, Dry Goods Review, Printer and Publisher, Bookseller and Stationer, Canadian Machinery, and Busy Man's Magazine. Good financial standing and business connection a strong recommendation. Just the position for a retired business man for his spare time. The MacLean Publishing Company, Limited, Toronto.

SALESMAN WANTED.

SALESMAN WANTED for western Canada. Must have knowledge of plumbing supplies; able to figure hot water and steam heating. State age, experience and references to Box 792, PLUMBER AND STEAMFITTER, Toronto.

PLUMBING AND HEATING MARKETS

MONTREAL.

February 13.—A very much better feeling now exists in trading circles. Orders are commencing to show good strength, and most of them are for immediate delivery, showing that stocking up is now becoming more general. The opinion is growing that spring will open with a good rush, and users are not going to stand the risk of any delay in executing work through not having the material on hand. Building prospects are undoubtedly good, not only locally but throughout the country. Stores and residences are being planned in every direction, but unfortunately the big buildings are not so numerous as the trade would like to see. Still there is no dissatisfaction as to prospects.

Jobbing work has been inclined to be quiet, but the majority of plumbers appear to have enough work in hand and in prospect to keep them going until the spring opens. The attention of many firms is being directed to Three Rivers and there is no doubt that some good contracts from this place will be offering. Prices have changed very little, but the markets are not held so firmly as they might be. There is still too much tendency to meet orders than is good for the maintenance of prices generally. Steam fittings are now on a list basis of about 70 off. There has been so much cutting in this line that it was decided to try and form a more united basis at 70 off.

IRON PIPE—Orders are coming in well for iron pipe. Shipping is general and prospects seem very good. We continue to quote: ½-in. black, $2.63; galvanized, $3.48; 1-in. black, $5.11; galvanized, $6.76.

SOIL PIPE—The soil pipe season has opened up well. Orders for immediate delivery are good, and it is evident that users are commencing to lay in stock. Soil pipe is the first thing needed when the building season opens, and users intend to be ready for the rush. Light stocks may have sufficed last year, but not for this. There has been no change in discounts, and we quote: Light, 3 to 6 in., 60 off; medium to heavy, 2 to 6 in., 70 off; 8 in., heavy, 40 off.

LEAD PIPE—Business is opening up well, and orders are improving as time goes on. Stocks have been kept so light that when the buying commences in earnest there will be a strong demand. There has been a firming tendency in prices, but we continue to quote: Pipe and waste at 27½ off. Traps and bends at 50; calking lead at 5c per pound.

SOLDER—The demand has improved, and it is evident that plumbers are commencing to put in heavier stocks. Prices are not so united on solder as they might be, but we continue to quote 19½c for half and half, and 18½c for wiping.

BRASS GOODS—Trade is showing better strength, but there is an absence of snap to the demand. Cutting is still going on, but prices generally are firmer than they were. With the good trade that is anticipated a stronger market should obtain.

ENAMELWARE—Jobbers are filling up their stock, and it is evident that users will have good supply on which to draw when the ware is wanted. Manufacturers are still extremely busy on contracts, and prospects generally are very favorable indeed.

RADIATORS AND BOILERS—Manufacturers are actively employed on orders, and in filling up their stocks. The consuming demand keeps up well, and things generally are in a very good shape. We continue to quote radiators at 52½ off, and boilers at 50 and 10. Steam fittings are now about 70 off, instead of 66 2-3. This change is due to an endeavor to get quotations on a more even basis, as cutting has been so prevalent.

METALS—There has been a change in copper and tin since last figures. The primary markets weakened, but are now showing better strength again. We quote: Ingot copper, $15; ingot tin, $31.50; lead, $3.70; pig iron, Middlesboro No. 1, $18.50 to $19; Summerlee, $20. Heavy scrap red brass is 10½c; light copper, 10½c; heavy lead, 2½c.

TORONTO.

Feb. 13.—No radical change has come over the plumbing markets during the past fortnight. There is not a single price change to note. Business is not as active as was anticipated at the beginning of the year. Inquiries are frequent enough, but buyers for some reason or other are holding off and not placing orders. The outlook improves, however, and plumbers who are not classed among the big men and who were doing repairing and jobbing work up to now are taking on new work for spring. One inquiry from the West caused a stir among local jobbers during the past week, but the order has not yet materialized.

A number of country points expect the coming season to be a good building one. While compared with this time last year more actual trading is being done at present, there is not yet the confidence abroad there was say two years ago. But "the best is yet to come" and while every jobber and plumber continues to speak hopefully the good season seems nearer at hand.

BRASS GOODS—The prices noted at last quotation still hold good, and there is a firmness to the market which is making for a better feeling. The new prices for fuller and compression work seem satisfactory all round, and the better grading of brass work generally has made a better understanding between jobbers and buyers.

IRON PIPE AND FITTINGS—Just steady orders are coming in, and they call for small quantities. Stocks are fairly plentiful in anticipation of the building season which will open in the spring. If the mild weather continues and the spring opens early there should be plenty of orders before many days go by. Cast iron pipe is still quoted at 70 and at 80 per cent. and malleable at 37½ and 40 per cent. 1-in. black is at $5.11, and 1-in. galvanized, $6.76. Malleable lipped unions are at 60 p.c.

SOIL PIPE—Like calls for iron pipe the orders for soil pipe are quietly steady. Stocks are good and plentiful at unchanged prices. Light pipe is 60 and fittings 70 per cent.; medium and extra heavy pipe and fittings are 70 per cent.

LEAD PIPE—Fair business is being done at stationary prices. Calking lead is 4½ cents to 5c per pound; traps and bends, 50; and pipe and waste 27½ off.

ENAMELWARE — Increasing from week to week is demand for this line. The factories are still piling up stock in anticipation of summer orders. Prices unchanged.

SOLDER—Slightly easier is solder this week. It has been down and up in price since last issue and quotations are back at the figures of a fortnight ago. Half and half is 19c, and wiping is 18 to 18½c.

BOILERS AND RADIATORS—This line is again opening up in activity. One of the surprises in the industrial world is the fact that although 1908 was a year of financial and business depression yet two of the large manufacturing houses turning out heating goods report last year as being the best one in their business since they entered the field of industry. Prices are at the old figures.

The building operations in Toronto for January were not as active as during the same month last year. The approximate value of permits granted was $380,025, as compared with $474,453 last year. The number of permits, however, shows an increase, there being 151, as compared with 109 last year. There were 220 new buildings involved in the permits, as compared with 128 last year.

The Honeywell System of Hot-Water Heating

14,000 Systems in Use in America.

We have recently made arrangements to manufacture Honeywell Heat Generators in Canada and have arranged with the leading boiler and radiator manufacturers and jobbers of the Dominion to carry our specialties in stock.

While our Canadian representatives will give their attention to making the trade on this side acquainted with the merits of the Honeywell System of Hot Water Heating and render engineering advice to the interest of the fitters, we will not fill orders direct for our specialties, but will supply the trade entirely through the established Canadian dealers.

The Honeywell System has met with eminent success in America. It is used in every state of the Union where hot water heating is installed. It is not the coming but the system in vogue in the States, and it will be only for any fitter of Canada to try out one job according to our instructions to prove beyond question that the Honeywell System is all that is claimed for it.

Honeywell Heat Generators will cure sluggish jobs and double the efficiency of jobs where the piping and radiators are too small for the gravity system. A number of Generators have been attached to existing plants in Winnipeg, Ottawa, Montreal, St. Hyacinthe, St. John and other Canadian points with entirely satisfactory results. Let us refer you to a number of them, also to new jobs installed in the Dominion according to our instructions. Write for "Book of Plans" and "Illustrated Folders" of jobs installed in all parts of the country.

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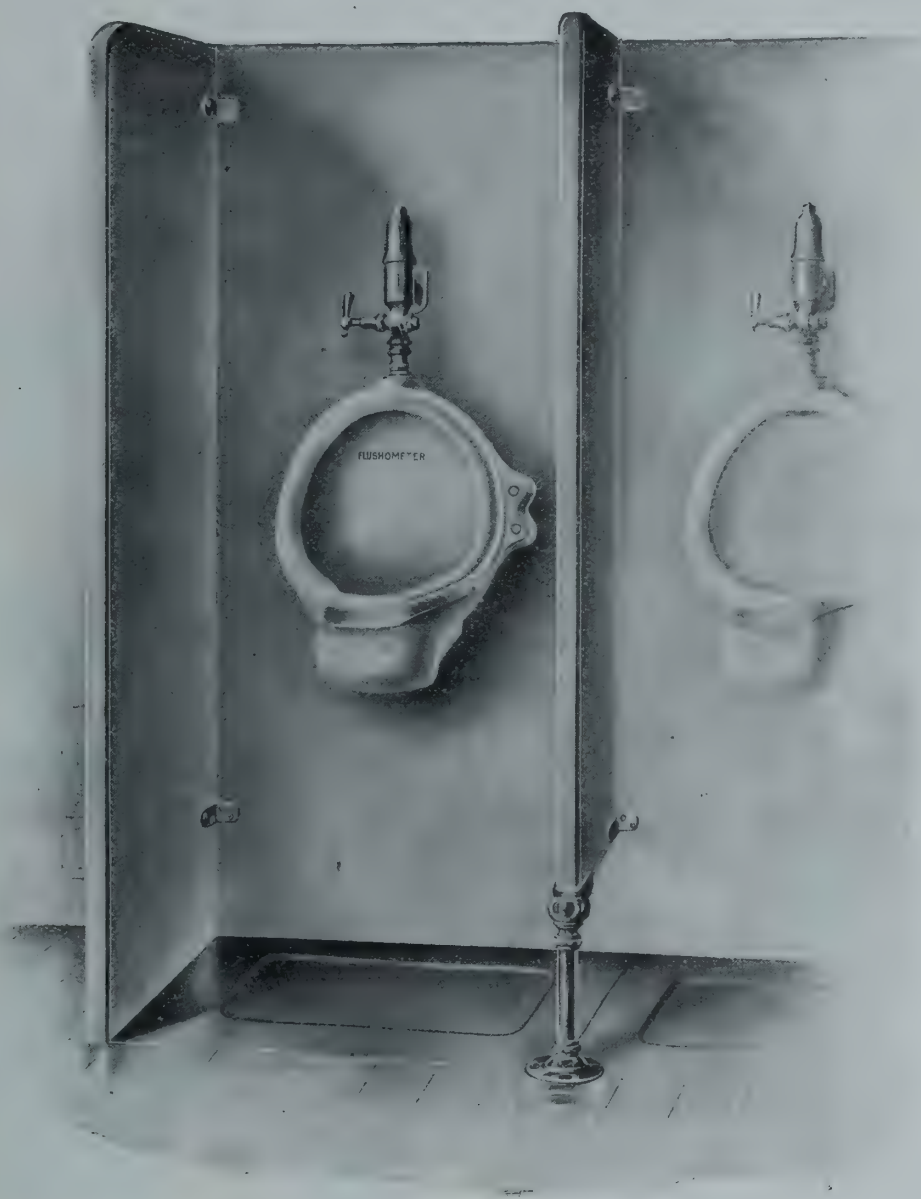

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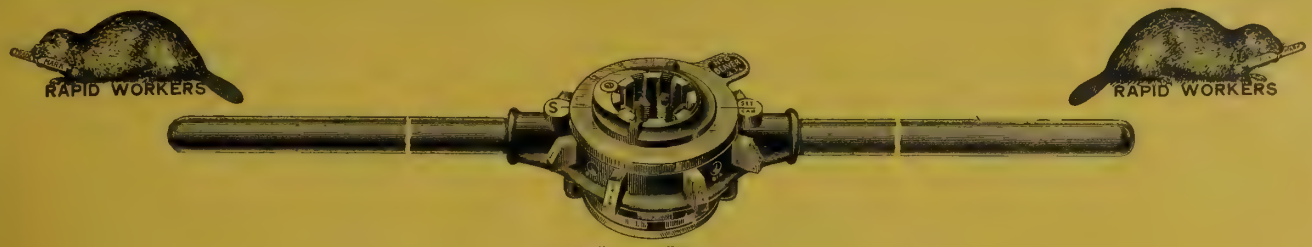

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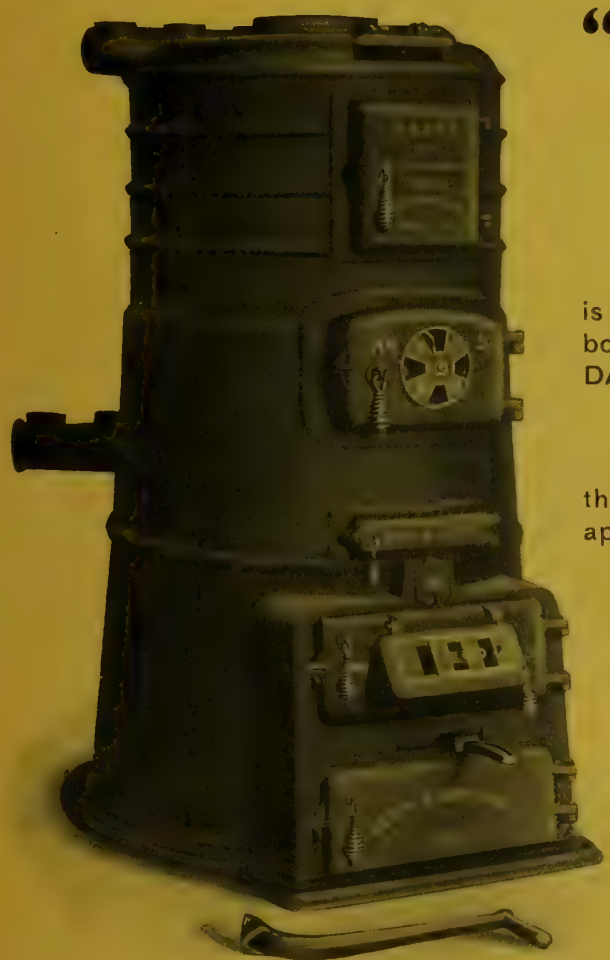

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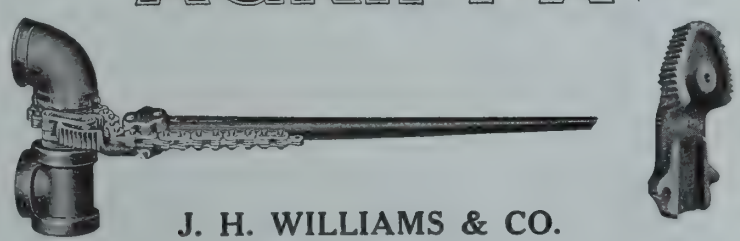

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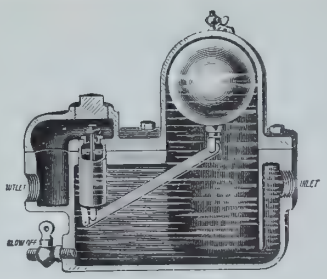

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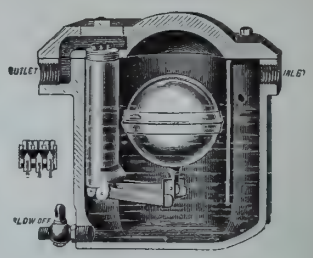

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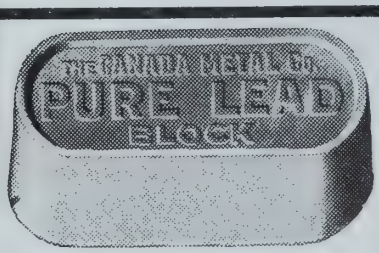

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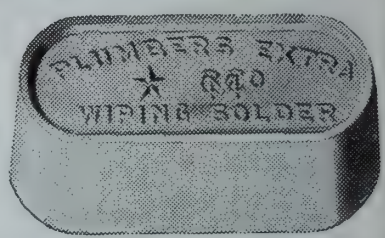

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MONTREAL, TORONTO AND WINNIPEG, MARCH 1, 1909

PLUMBERS' TRADE ORGANIZATION.

While the idea has not been dropped by any means, the slow progress made with the proposal to organize the trade in Ontario is rather discouraging.

Provincial Vice-President Cooper, on whom the responsibility rests, has been working hard in trying to bring the trade in Toronto together but has found it up-hill work. Progress is undoubtedly being made as the second association organized last spring has withdrawn from the field and all are now united in one association. But there are many who hang back and fail to attend the meetings, even though such an important question as the revision of the plumbing by-laws is being discussed.

There is undoubtedly a need as well as a growing sentiment in favor of a provincial organization in Ontario and irrespective of the delay in bringing the entire trade in Toronto together it is timely that a call be issued for Ontario plumbers to meet on Good Friday (April 9) and take steps towards organizing the trade throughout the province. There is just a month to do this but that is plenty of time if action is decided upon at once.

Some are beginning to ask also where the national convention is to be held next July or August. Halifax and Toronto have been suggested and it is not too soon to take this matter up and select the meeting place.

ARE CANADIAN PLUMBING INSPECTORS UNPROGRESSIVE?

Out of an attendance of one hundred at the fourth annual convention of the American Society of Inspectors of Plumbing and Sanitary Engineers at Omaha in February, not a single Canadian was registered, although a year ago one attended and both last and this year another sent a paper which was appreciated by the delegates.

Evidently the plumbing inspectors in Canada are not appreciated by their civic employers or Toronto, Montreal, Ottawa, Winnipeg, Vancouver and Victoria would, at least, have sent delegates to gather ideas about the most up-to-date sanitary procedure. Or, is it the case that Canadian plumbing inspectors fail to appreciate (or over-estimate) themselves and made no effort to induce the municipal authorities to set aside an appropriation for the sending of a delegate.

In any case, it is the duty of the sanitary inspectors of Canadian cities to affiliate with the American society and thus get in line with all that is progressive in their calling. They owe this to themselves, to the master plumbers whose work they supervise and to the public whose interests they are intended to be the guardians of.

Canadian cities (with a few honorable exceptions) do not enjoy any too good a reputation for plumbing inspection, the common practice being to shove the work onto an over-worked city engineer or give it to some inexperienced individual who will work for a small salary. The public treasury, as is too often the case, is of greater importance than the public health.

It is to be hoped that some Canadians will be sent to the 1910 convention at Trenton, New Jersey, next February.

PROFIT-SHARING AMONGST EMPLOYES.

About 6,000 employes of Crane Co., Chicago, with thirty-five branch houses, including Winnipeg and Vancouver, share this year, as they have for ten years past, in the profits of the company, the amount appropriated this year for the company's Christmas gift being $340,000, on the basis of 10 per cent. on the earnings for the year of each employe. The total amount distributed by the company since the adoption of its profit-sharing policy runs to more than $2,100,000.

The man who is close and niggardly with his employes who pays not a cent more than the stipulated wage—and often pays that grudgingly, says Mr. Crane, gets but the service he pays for; he does not get loyalty or enthusiasm or regard, nor does he deserve to get them. He gives nothing and he receives nothing. He loses by his failure to be generous and just. He lives a wretched existence, and he leaves nothing worth while to show for his life of labor.

Let the employer who never has tried the experiment of giving to his employes, and who feels they have something in reserve that he is not getting, set aside a portion of his annual profits for distribution among his employes, on some equitable basis and note the results. In all probability the first year will prove the wisdom of his course, and he will make some sort of profit-sharing a part of his business policy if for no nobler reason than that it pays.

PUBLIC COMFORT STATIONS IN CANADA.

Continuing our articles on the need of public conveniences in Canadian cities, this issue of The Plumber and Steamfitter contains an article clearly showing the need for action by the city council of Montreal. What should have been done long ago ought to be done without further delay and the Montreal Master Plumbers' Association should seek the co-operation of the architects and builders' organizations in forcing the matter into public attention.

Hamilton's modern station is also described in this issue, and the need for another in the centre of the city is pointed out.

In The Plumber and Steamfitter of March 15 descriptions of stations established at Toronto and St. John will be given.

CHEAPER LINE OF COMBINATIONS.

A meeting of Ontario manufacturers of plumbing supplies was held in Toronto on February 26. A number of matters of interest to the trade were discussed.

Owing to the competition of Eastern houses sending in low cost lines of enamelware and closet combinations it was resolved by the representatives present to put on the market as early as they can be manufactured a cheaper line of closet combinations to meet this competition.

This new combination will sell for $13.50. The tank will have an 8-inch copper lining instead of 10-inch, as in the present high-grade line now offered, and the wood will not have quite the same elaborate finish. The flush will be operated by a low ball cock instead of a high ball cock. This new line will not supersede the grade now selling, but will be offered in addition simply to meet the low cost combinations sent in from across the border. It is hoped to have these new combinations on the market before April 1.

Nearly every plumbing supply house in Toronto and Western Ontario was represented at the meeting.

POWERS OF THE MUNICIPALITY.

It having been proposed to establish a public comfort station costing $15,000 at Kansas City, Mo., six property holders brought suit for an injunction against the city restraining them from locating the public comfort station at that point. The case was decided by Judge James H. Slover of the Circuit Court, who denied the petition of the property owners. In deciding the case Judge Slover held that the city had the legal right to use the streets for all beneficial purposes which the public good may require. He said that, judging from the evidence submitted at the trial of the case, there is considerable doubt as to whether or not the property of the complaining property owners would be damaged by the building of the comfort station. If it should prove that the adjacent property were damaged by the building of a public comfort station, said Judge Slover, then the property owner would have his right of action at law against the city.

In handing down his decision Judge Slover said: "It is insisted by the property owners that the city has no power to use the streets for a public comfort station or for any other purpose that interferes with the free use of the streets by the general public. But Dillon in his work on municipal corporation says the power to regulate the use of city streets is not limited to a mere right-of-way, but it extends to all beneficial uses which the public good and convenience may from time to time require, and so it has been declared by the highest courts of this country. It has been held that the city may authorize the erection in the streets of telephone poles, telegraph, electric light or electric street railway poles, the construction of sewers, laying water pipes, the erection of hydrants, build reservoirs and cisterns, in the streets. Large powers are conferred upon the common council by the new charter, and I believe its provisions broad enough to authorize the building of the public comfort station at the place selected by the city for that purpose. It is also claimed by the plaintiffs that the erection of this comfort station will depreciate the value of the adjacent property. But in this case the evidence as to the effect upon the business interests and the value of the adjoining property by the building of the public comfort station is conflicting and uncertain. In a situation of this kind where it appears the damages would be slight or it is doubtful whether any damages would be allowed by a jury, the practice is to deny the injunction and leave the complaining party to his action at law against the offending corporation. The plaintiffs' contention must be held untenable and a temporary injunction is denied."

MISTAKE TO PUSH CHEAP GOODS.

The announcement is made that a cheap line of closet combinations is to be put on the Ontario market this spring to compete with cheap imported goods. This is a backward step and the best master plumbers will refuse to instal the cheap goods.

At the Omaha convention of the Plumbing Inspectors reported in this issue steps were taken to establish a standard for plumbing goods and the supply associations in the United States are co-operating in the effort to raise the quality of bath-room supplies.

Referring to this matter the Metal Worker says "there is no question but the old practice of making goods considerably below what common sense would consider the proper quality has been followed to such an extent as to deceive the final buyer, and to place upon those who make good goods unnecessary burdens in maintaining their commendable standards and securing a sale for the product. For more than a year the plumbing supply associations have been endeavoring to perfect some plan whereby goods of an acceptable standard can be protected in bearing a mark which is their stamp of meritorious quality. A disposition was clearly in evidence at the recent meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers toward the adoption of a standard of weights, dimensions and designs for goods which can be accepted for the best work of its members. All who are connected with sanitary work should be thoroughly in accord with the purpose of these various allied organizations, not only to adopt standards of excellence, but to provide a mark for product worthy of bearing it so that the engineer, the inspector, the plumber and the manufacturer can point out to the final buyer the safety of buying goods bearing the proper mark and the risk which is run when articles are accepted having no such guarantee."

Win a reputation for installing only high-grade goods and customers will have no objection to paying for future work. Do cheap work and the public will continue to look upon you as a hold-up artist.

Plumbing Inspectors Annual Convention

No Canadians Attend the Fourth Annual Meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers—Next Meeting at Trenton, N. J.

The fourth annual convention of the American Society of Inspectors of Plumbing and Sanitary Engineers, held at Omaha, on February 8, 9 and 10, was attended by about 100 members, and although no Canadians took part, the proceedings were of sufficient importance to warrant their reproduction in The Plumber and Steamfitter to enable all Canadian plumbers, inspectors and sanitary engineers to grasp the importance of the work being done by this young but aggressive organization.

Some very instructive papers were read at the meeting, each being discussed by the members, the interchange of ideas between the men who are grappling with the problems of sanitation in the cities on the shores of the Gulf of Mexico, the Great Lakes, the Pacific and the Atlantic, being one of the most valuable features of the gathering.

In future issues of The Plumber and Steamfitter some of these papers will be reproduced, while in the present number an effort will be made to show the value of the work done at the convention by giving sections of the reports of the meeting appearing in the plumbing trade papers across the line.

President's Address.

President Edward Quinn, Chief Plumbing Inspector of St. Louis, in opening the convention, said:

It affords me great pleasure to note the steady growth of our society, and, as one of its founders, I assure you that it is with keen gratification I have watched it grow from the few pioneers who blazed the way to a splendid organization, whose membership embraces a majority of the inspectors in large cities of the United States and Canada, and has even extended to the far off Isthmus of Panama. And I feel assured that as the different cities begin to realize and appreciate the improvement in their sanitary conditions, as a result of the knowledge gained by their inspector through his having attended our conventions, where he mingles with the representative plumbing inspectors, and where the interchanging of ideas shows him how he can improve the sanitary condition of his home community, they will then be anxious to send a delegate to our future conventions.

One of the chief obstacles in the way of the inspector attending our conventions seems to be the lack of an appropriation of funds for that purpose. After numerous letters written by me at the request of various inspectors addressed to the mayors or presidents of the Boards of Health, the usual reply was "no funds," but if the inspector will exert himself with the Council that they had no doubt that an appropriation would be passed to pay his expenses.

It appears to me that if the inspector would make the proper effort to impress upon the minds of his councilmen the importance of attending these conventions and the knowledge he will gain, and that in the end it is his city that reaps the benefit of the knowledge thus acquired, there would be a yearly appreciation made to defray expenses of this kind; as in this age of progress it is the general demand of citizens that their municipal government be conducted along strictly modern lines, there should be no objections on their part to paying a man's traveling expenses when he does so to acquire these modern ideas in their interests.

With your permission, would like to touch upon some few subjects which may be brought up and discussed at length before this convention adjourns.

Plumbing Examining Boards.

First and foremost is the examining boards. I believe that it is the duty of every inspector here to try and have legislation enacted by his proper body to create a Board of Examiners of Plumbing, if they have none, and to see that this board is constituted along practical lines, and that it be made to avoid all catch questions, and that all boards be made to recognize the apprentice or the boy, and that they help him to obtain a knowledge of plumbing, for we all know that the boy, if taught the business properly, will eventually become a competent plumber and a competent plumber makes a useful citizen, and the community profits by his knowledge of sanitation. The trade papers throughout the United States and Canada have my hearty commendation for the manner in which they write and dwell at length upon the subject of the instalation of good plumbing and its benefits; and in places where there is no plumbing inspector to consult, these papers are invaluable to the plumber, as an information bureau to guide them along the correct lines and to help them out of the many entanglements and in solving problems that may arise with them or their clients from time to time.

Durham and Mixed Systems.

I have been called upon more during the last year to express my opinion relative to the Durham and "mixed" systems than I have during all the previous years of my incumbency, and I have investigated this matter thoroughly and will state for your information that after inspecting some of this Durham system in our larger buildings, installed some 10 or 15 years ago, I find that the stacks throughout these buildings have been entirely eaten away by electrolysis or other causes, and I think it is time that the society should take up this matter and investigate, as I have, and let the people know through the various trade papers the results of their investigations. I, as a great many of you, know the objections to the use of cast iron pipe in fireproof buildings is the expansion of the lead in the joints.

On one of my recent inspection rounds I engaged in conversation with a plumber who was repairing and replacing some of the wastes on the Durham system in one of our buildings. and he informed me that he would prefer caulking a dozen joints in bad places than replace one waste of a Durham system. In my estimation the subject of "Cast Iron Stacks" should be taken up to determine if there is a chance for some improvement in the method of caulking joints that would stand expansion.

The Anti-syphon Trap.

Another subject I wish to bring before you is the anti-syphon trap. Some of our leading inspectors and authorities throughout the country have lent their indorsement to these traps. I wish to state that after experimenting in my office, my opinion is, an ordinary drum trap properly installed will offer as much resistance against syphonage as any anti-syphon trap on the market, and I believe that if it is absolutely necessary to use an anti-syphon trap the plumber can make and instal a trap that will do as much service as some of the high-priced, patented, anti-syphon traps; and while I realize that this society does not wish to stop the wheels of progress by unloading a lead trap on the public, if

they want a higher priced trap, still I would like to see the cost of plumbing reduced to encourage more plumbing, thereby improving the sanitary conditions.

The Cleanout.

Another subject is the cleanout. Recently on numerous occasions it has been called to my attention where the cleanout, installed with the best intentions, has been removed by the handy man the first time the sewer became blocked and never replaced, thereby allowing the sewer gas to pass up through the building; and I have no doubt that a great many of you have found the same thing to exist. I have overcome this condition in our municipal buildings by specifying that the last fixture on all runs be installed with 45 degree els, so that the fixture can be removed and the connection used as a cleanout, and then you can rest assured that the fixture will be replaced and connection made tight to keep it from leaking.

I have been watching with interest from time to time the progress of the flushing valve, and a great many of them have been installed in my city, and a number of them had to be removed, as they did not work satisfactorily, and every time I looked at one it reminded me of the time I started at the plumbing business, nearly 20 years ago, when the old pan water closet was popular. In my estimation a great many of these so-called flushing valves are a resurrection of the old time pan closet on a larger scale. I think it would be well if our society would investigate these valves.

Discussion.

Henry B Davis—In discussing the matter of making tests with the Government officers, I found that tests conducted for manufacturers were usually paid for, but as I outlined the character of the work desired by our society and its interest to the public, I found that the department was generously inclined, and if our society would indicate what was wanted and would assist in the work, it would be done without cost. I have been promised materials and fixtures from the manufacturer, and the work of making the connections from the master plumber.

A National Plumbing Code.

President Quinn presented the following motion, which was carried:

I move that this society instruct the incoming president to appoint a committee of three, and that the secretary be ordered to ask the National Association of Master Plumbers and the National Association of Journeymen Plumbers to appoint a like committee; that these committees be instructed by their respective organizations to wait on the United States Congress as a Joint Committee and seek to impress upon their minds how important it is that they secure the passage of an annual appropriation bill to defray the expenses of a Test Committee, comprising a representative of each organization, to draw up suitable rules and regulations to be known as "the National Plumbing Code;" and this code be mailed to any one upon application who is interested in sanitary plumbing. Also to empower this committee to make tests of the various materials used in plumbing, and ascertain the life of the different materials under different conditions.

In support of his motion he said:

I wish to bring before your attention that the Government spends thousands annually on agriculture and horticulture, the Pure Food Law and veterinary surgery, and if the Congressmen of the various districts knew that you were interested in any of these subjects they would be glad to mail you whatever information you may desire; but not one dollar do they spend on sanitation which affects the health of the entire community. I am fully aware of the fact that Congress could not compel the enforcement of this code by the different cities, but it would enlighten a great many of our people as to what is the right kind of plumbing to instal. In my own city the National Government spends thousands of dollars annually testing coal and cement, and I firmly believe that if we present this matter to Congress, in the proper manner, we can bring these tests about, and we will then be in a position to know the materials we are using, and there will then be more facts and less guessing, and the community at large will know that this society has tried to bring about good sanitary conditions throughout the United States.

Inspectors' Examinations Proposed.

The following resolutions presented by John K. Allen were referred to the Board of Directors:

Whereas, it is extremely important that the inspection of plumbing should be placed under the operation of the Civil Service, and, whereas, in order that this may be done it is necessary that there shall be a body of men trained to occupy the inspectorships; therefore be it resolved, that the incoming Board of Directors be instructed to hold, during their term of office, an examination for persons qualified to act as plumbing inspectors, the certificate of this society to be given to such persons as successfully pass this examination. Resolved, that due notice of the time and place of holding the examination be given in the trade and daily press, and that there shall be no fee attached to such examination, but that a fee of $5 shall be paid for the society's certificate.

In discussing the work of plumbers' examining boards, President Quinn said that in the past year St. Louis had examined 1,400 plumbers. "Some master plumbers," he said, "do not support the inspector. I am opposed emphatically to any obstacle that will prevent the American boy learning the trade. Some men have been found incompetent and have been employed by master plumbers even when their poor work would not pass inspection, and the cost of changing amounts to more than the saving in wages. I favor registering the apprentices and then seeing that they are properly taught the trade. Too often men cannot pass examinations because of catch questions which are to my mind unfair."

Plumbers' Examining Boards.

J. G. Haughton—In Minneapolis our Examining Board has, in addition to the city officials, a master and a journeyman plumber or five members in all. We first outlined a practical test, the test to discover the man's knowledge of the principles and theories of the plumber's work. We have found many men who can do excellent work that will pass inspection who could not pass an examination. These men have been in business for years in some instances, and under our present law the question arises before our board as to what to do in such instances. I am here to confer with men from other cities, and I believe that all cities will benefit which send their inspectors to these national meetings.

F. W. O'Neill—Some of our young men are given conditional certificates, and they are under supervision for six months, when, if their work is satisfactory, the certificate is made permanent.

J. C. Alford—It is the opinion of E. H. Donahue, president of Illinois Plumbers' Examining Boards, that there should be a State examination or registration, so that a man who fails in one town cannot go to another town and pass.

Mr. Quinn—In St. Louis we allow men who have failed to try to pass again in three months' time. It is impossible to legislate a competent man out of a certificate, and we require a percentage of correct answers of but 65 per cent.

Mr. Davis—In Washington we hold the master plumber responsible for the work of his men, so we avoid all the troubles of examining journeymen that are experienced in Illinois. We pass a man on 70 per cent. If a trap is renewed the department must be informed of it.

T. J. Farrell—Every policeman in San Francisco is a sanitary inspector, and must go into a house and see if the plumber has a certificate. If he has no permit, he stops or is arrested.

W. H. White—In New York State a man must apply for certificate in the city in which he expects to do business.

C. S. McCosker—In Mobile after a man gets his certificate we watch him. We examine the journeymen. Permits are only issued to licensed plumbers. Journeymen plumbers are not licensed and cannot get permits.

W. G. Williamson—In Detroit we are working under a State law, which requires the registration of both the master and journeymen plumbers. Our Board of Examiners meets weekly, but only examines men who are vouched for. Then our examination is simple and to the point.

A. C. Shaver—If we do our part as inspectors, the character of the examination is not of great importance. A man may pass a fine examination, but we must see that he does his work as well.

Standards for Plumbing Material.

On motion of J. C. Alford and E. Willard, it was resolved that in the sense of the society the time for adopting standards for plumbing material is opportune, and that a committee study the soil pipe and fittings standards recommended and consult other interested bodies in order that positive action can be taken at an early date.

Investigation of Drain Air.

Charles B. Ball presented the following resolution, which was adopted, with the order that a copy be sent to the National Association of Master Plumbers:

Resolved, that in making the investigations into the character of the air of house drains, the Sanitary Committee of the National Association of Master Plumbers is entitled to the thanks of all who are interested in sanitary science, and that it is the earnest hope of this society that the most valuable report of the committee may soon be published and its findings be made available to other bodies interested in sanitation.

Election of Officers.

President—Charles B. Ball, Chicago.

First Vice-President—A. C. Shaver, Pasadena.

Second Vice-President—Frank W. O'Neill, Joliet.

Secretary-Treasurer—C. S. McCosker, Mobile.

Directors—Henry B. Davis, Washington; Harry W. McVea, Omaha; Isaac R. Carver, Pittsburg.

Next Convention.

Invitations for the 1910 convention were received from Detroit, Baltimore, Milwaukee and Trenton, and on a vote being taken the New Jersey city, famed for its pottery productions, was selected.

(Continued on page 19.)

Iron vs. Lead Pipe Under Bath Room Floor

By John C. Alford, Supervising Plumbing Inspector, Chicago.

As a boy on entering the plumbing profession it was the goal of my ambition to be able to wipe a joint. The plumber who could do the neatest job of lead work and who could put up the most elaborate kitchen piece (and there were some crackerjacks) generally went around with his chest expanded, and all the small fry looked upon him as a sort of idol. In those days lead soil pipe was still in vogue and pan closets were the rule.

Things have changed wonderfully. Who in the present day would attempt to put in a pan closet? Iron has replaced lead for soil, waste, vent and supply pipes; and we see less and less lead being used. In some of the highest types of buildings to-day there is not a pound of lead or a stick of solder used on the plumbing system. These include office buildings, schools and hospitals.

There must be a resaon why this change has taken place. I will endeavor to give the reasons why, in my opinion, iron pipe is superior to lead, particularly for work under bath room floors.

Vicissitudes of Hidden Lead Work.

When the plumber roughs in a building, placing the soil and vent pipes in the walls and tests them, he cannot place the lead work under the floor with any assurance that it will be in the same condition when the building is ready to finish as when he left it. In fact, he is not assured that the lead work will be there at all. It may be stolen and sold to the junk man, which in the past has very often been the case. The chances are that it will be stepped on and smashed by carpenters, plasters or other mechanics on the job. If perchance the lead work passes safely through this stage of the building operations, on laying a wooden floor the carpenter may drive a nail into the pipe, which is not noticed until the water is turned on, when a stain showing on the ceiling below is the first indication that the carpenter has done his work only too well. Then the plumber generally had to pay the damage. If tile floor is put in the tilesetter allows cement to drop into the trap and closet bend, which when it hardens has to be chiseled out with the chance of cutting the lead. After the building is finished and occupied for some time the plumber gets a hurry-up call, and, on tearing up the bath room floor, finds that his old friends, the rats, have eaten a hole into the pipe; or it may be that the lead bend has broken at the ferrule, the leak causing damage to finely decorated ceilings and walls, leaving a hole through which the deadly sewer air passes; or the leak might be caused by the lead breaking around the joint caused by constant contraction and expansion. These horizontal are the very pipes which should be tested and made tight.

In roughing in a building with all iron pipe, using iron or brass traps and iron closet bends, the work can all be tested at one time up to the floor and wall lines, which, under the system of circuit waste and vent, leaves only two joints in the bath room not tested. These are the closet connection and the joint at the basin trap.

Under this system we can be reasonably sure that the job will be tight when finished; that there will be no nails driven into the pipe; that rats will not make a meal of it; that the pipe will not sag and leave a pocket to fill up and cause a stoppage; and that the pipes will be in the same condition when the plumber is ready to finish as when he left them after roughing in. The connection between the flange of an iron bend and water closet will be much more secure than the old putty joint.

Protecting Pipes from Cement Floor.

In connection with this subject it might be well to suggest that where a tile floor is to be put in, the pipes, whether of lead or iron, should be covered with tar paper to prevent the pipes disintegrating through the chemical action of the cement. This action will take place in pipes through which hot water passes.

The old-time plumber may say, "We have nothing but iron pipe butchers now." I take off my hat to the old-time plumber. He was there before I came, and it was he from whom I learned my first steps in the trade; but plumbers have progressed as much as plumbing. We might as well try to push back the flood as to try and do work as it was in days gone by. The up-to-date plumber takes advantage of every opportunity to advance the science of plumbing. He must be able to read a plan, and knows that one-sixteenth of an inch on a plan means something, and must be able to lay out his job with the many angle fittings which are so much used to-day, and the plumber who has charge of the instalation of the plumbing system in any of our skyscrapers has as much resting on his shoulders as the general of an army.

Now I am not going to state that iron pipe is better than lead in all cases, for iron pipe is almost useless for wastes where acids are used, and there are other

purposes for which iron cannot be used as well as lead, but for plumbing work in all ordinary buildings iron wastes and vents are much superior to lead.

Discussion.

Philip Mueller—I have had experience with nails being driven through iron gas pipe.

G. D. Dorsey—I was very much interested in this paper, but it seems to me that about the only reason advanced for the use of iron pipe is that there is less danger of loss or damage to the plumber who is putting in the work. It is a fact that lead pipe has to be watched while being put into a building where there are boys around, and, of course, there is a possibility of a carpenter driving a nail through it. But there is also absolutely no doubt but that lead pipe will last longer than iron pipe. There is not a man in this room that don't know that lead stands the elements better than iron. It will last forever under proper conditions. If a lead pipe gives out under certain conditions, an iron pipe will surely give out in one-half or one-quarter of the time under similar conditions. There is no doubt of that, except on the fire proposition. If you put heat close to it, or hot cinders, then, of course, it will melt before iron. But that piece of lead at the further end of the room gives a fair example of the length of time that lead will last, and we have a record of lead pipes a good deal older than that. It is a piece of the lead pipe that was taken from under the fashionable Palace Hotel at Rome. They were digging under it in July, 1907, in one of the sub-cellars, to put in an electric light plant. The workmen came across this pipe about 30 feet below the surface of the ground. In other words, in 1,800 years, the level of the city had gone up about 30 feet. They stole all the pipe and cut it up in pieces, and carried it out in their clothing and sold it for lead, except the one piece, which, being inscribed, was worth a great deal more than its value as lead.

The water department of Rome was, in the old times, a possession of the emperors, and they derived a large portion of their income from the revenue that they got from the water. They also owned and controlled everything that was used in connection with the supplying of water, such as the manufacture of lead pipe and sheet lead. The particular pipe was made in the factory of the Emperor Vespasian, who had in charge of his factory a gentleman, at one time a slave, named Callisto, which means the handsome one. The emperor liked him and made him superintendent of his factory, and he certainly made very good pipe. The pipe was made in this way: They had a bed of sandstone and they melted the lead into a thin sheet, and then they turned it up in the shape of a pipe, and a torch was applied to the edges until the edges were brought to the melting point, when it was welded together into a solid pipe. Every house of any size had the owner's name on the pipe, as well as the name of the emperor who was reigning at the time the pipe was made.

Graft in Old Rome's Water Department.

And there was graft in the water department. There was a man by the name of Frontenis who was water commissioner in the City of Rome a little before the time Christ was born, nearly 2,000 years ago, who was called in by one of the Caesars. The emperor was confronted by a great deal of grief on account of a shortage of water in the city. They had seven aqueducts. Rome, being in the midst of a plain, where the water was so bad that it could not be used for the ordinary purposes, it had to be brought for a great many miles from the hills. From time to time, as the city grew, they built these stone aqueducts, which conveyed sufficient water for the public use and for the gardens and their baths and domestic supplies; and, at this time, they found that the seven aqueducts were not sufficient to supply the city, and yet they knew there was something wrong. They knew there was a great deal of graft and stealing going on. So the emperor gave this Mr. Frontenis the job of water commissioner and he was to see what he could do about it. He was a man that had made a good deal of a name for himself. He had been a soldier, an orator and a statesman, and at that time he had retired from public life and was living as a gentleman farmer near Rome. Frontenis came and took hold of the job. That was a little before Christ was born. And he wrote a book that is considered a standard. A remarkable book. It can be bought. Copies of it have been printed by the Lloyds of Boston. And he said the first thing a man ought to do when he was called to take hold of a job that he did not understand was to thoroughly familiarize himself with the conditions. So the first thing he had to do was to find out the aggregate amount of water that these seven aqueducts could convey into the city and then to estimate the amount of water that these supply pipes carried to the users; and he found there was a very great discrepancy; that there was a great deal of water not accounted for. In other words, that there was water being stolen. They charged a man according to the size of the pipe that ran into his place. At first they used lead pipes, but they found that the water men, as they called them then, or what we now call plumbers, for a consideration would expand the pipe. If the water user was entitled to a ½-in. pipe, they would expand it a little and give him more water than he was paying for. So they arranged to put a stop to that practice by putting in a bronze nipple, about 6 in. long, of certain sizes. They could not expand the bronze.

But even then the men would give them 2½ in. pipes and only charge them up with a 2 or a 2¼ in. pipe, so a great deal of water was being stolen. He found among other things that the plumbers who were in the service of the emperor were being employed for other purposes than the emperor's work. Instead of devoting their whole time to the work of the water system some rich man would hire them to go and plow his field and take care of his furnace and all that sort of thing, so they branded these men on the hands so that they would be known—just like they did last night. The point I wanted to make was this: Mr. Alvord, I think, was perhaps carried away with the troubles that he has had to contend with in putting in lead pipe. I built a house in the country recently. I had lead pipe put in all the way through and it cost a great deal of money simply because I live in a community where the old-fashioned plumbing has gone out of style. But I know that the plumbing that I put in my house there will be just as good 50 years from now.

B. J. Herrick—I live in St. Louis, where more lead is used in plumbing than in any city in the country. A nail can be driven through a lead pipe, but that is not the fault of the lead. I have seen the plumbing after 50 years of service in perfect condition because lead was the material used.

President Quinn—Cast iron pipe for sink waste fills up more quickly and gives a great deal more trouble than lead from this cause. There is a building in St. Louis in which the wrought iron drainage system, after 15 years of service, will soon have to be replaced at a cost of $15,000, preparations to that end now being under consideration.

CONVENTION PROCEEDINGS

The official report of the proceedings of the Plumbing Inspectors' and Sanitary Engineers' convention at Omaha is to be issued in book form. It will contain a great deal of matter of great educational value to every inspector or engineer engaged in sanitary work. If one finds it impossible to attend the convention the next best thing is to secure a copy of the discussions at the meeting. Non-members of the society can secure these on payment of $2.50 sent to C. S. McCosker, secretary-treasurer American Society of Plumbing Inspectors and Sanitary Engineers, Mobile, Alabama.

Montreal's Lack of Public Conveniences

Great Need for Lavatories in the Business Section of the City—Fine Public Squares Suitable for Either Underground or Artistic Aboveground Stations—City Council Should Rise to Its Duty—Hamilton's Public Comfort Station and its Need for Another.

There is no doubt that the absence of any public convenience in Montreal is a standing reproach to the progressive spirit of the City Council, and as signal an example of public apathy as could be met with in any civilized community. To the traveler who lands in Montreal from the Old Country and stays any length of time in the city, and to the emigrant who makes the metropolis of Canada his new home, nothing seems more benighted than the absence of those conveniences which are so common in their native land. That the citizens themselves should submit to such an indignity—for indignity it is—is a matter of astonishment to those accustomed to the comforts of a well-governed English city.

Victoria Square, One of Montreal's Central Breathing Places.

As things are at present, and seem likely to be for some time, the public of Montreal have to depend solely upon private facilities to supply the lack of municipal enterprise, and there are times when even these facilities are not available. Departmental stores, the chief conveniences for women, are not open Sundays and holidays, while saloons and business premises are similarly barred to men—at least, the former are supposed to be. Apart, however, from the consideration of these special days, it is a matter for condemnation that the public throughout the week should have to lay themselves under an obligation to private firms.

So far as a resort to the saloons is concerned, a grave moral danger is incurred. Many a young man would hesitate to avail himself of this class of convenience unless he, as it were, paid his footing. He is afraid the barman would look askance at him unless he ordered a drink. The danger of this is apparent, while the man who has a conscientious objection to enter a saloon is denied the easiest facility that the city affords. So far as the large business buildings are concerned, a stranger to the various flats is put to a very great deal of trouble, besides finding in many cases the door locked. It is getting a common practice for the tenants to lock the lavatories for the sake of the legitimate occupants of the flats, and to save the extra crowding in the elevators and the presence of people who are not there on business. Besides the lessees are not paying rent for public conveniences. From extensive inquiries made by Plumber and Steamfitter, it is apparent that business firms and janitors are finding strangers a growing source of inconvenience, and that the number of firms who are locking their lavatories, in consequence is increasing.

So far as the departmental stores are concerned the management are naturally not averse to the present position. As one large dry goods man said, it brings the women into the store, and whatever expense these facilities entail in their upkeep is more than made up by the general advertising and the greater purchasing. "A woman may enter the store," was the significant observation, "with no idea of buying, but it is up to us to see that she does not go out empty-handed." This, of course, is very satisfactory for the departmental stores, but it is not right that women should be placed in such a position.

Visitors to the city find themselves in even a more awkward predicament. There is no knowledge as to where the facilities exist, and to many the delay thus involved is fraught with grave constitutional danger. Another point in connection with the establishment of public conveniences is the facility afforded for washing, and securing a general brush up, especially to the man or woman who is in the city for business purposes. It is a costly wash which necessitates a visit to a restaurant or barber's shop.

If there were any objection to public conveniences from an aesthetic standpoint, there would at least be one tangible objection to thresh out, but underground facilities of good class construction and design, do not offend the eye in any way. Many of the conveniences in London, New York, and other places are hardly noticeable, especially when they are made to conform with the architectural surroundings. Even erections above ground are not objectionable when constructed with care, and the writer knows of many buildings that are models of neatness and design. Besides, in any case, Montreal cannot be said to be governed by the slightest regard to aesthetic taste in the management of its streets, for a more unsightly and dirty city it would be hard to find.

Montreal is splendidly placed as regards sites for public conveniences. There are many open places which would make admirable locations for up-to-date conveniences. For instance, Victoria Square in the very centre of the city, could not be improved upon. As the City Council have decided to do away with the large fountain in this square owing to the inability to keep it in a clean state, an exceptional oppor-

tunity is afforded, while the workmen are effecting the alterations, to build an up-to-date underground convenience. Place D'Armes would make another fine location, while for uptown purposes Phillip's Square and Dominion Square would make admirable sites.

Attempts have been made from time to time to get the Council to move in the matter, but nothing has resulted. The aldermen express approval of such places, but the general cry is the want of money. But money seems to be easily found for other and much less utilitarian purposes, and we are inclined to believe that it is not so much the need of money as to the general apathy on questions affecting the welfare of the public. It is, therefore, for the citizens to see that the hands of the Council are forced, as the present state of things is deplorable.

Interviewed on the question of public conveniences, J. E. Dore, City Sanitary Engineer, said that Montreal should certainly have public conveniences. His committee had been trying for the past eight years to get the Council to move in the matter, but whenever the question was brought up it was met with the old cry of no money available. It was high time that something was done. He favored the construction of underground conveniences as they were less offending to the eye, and could be kept warm easier in the winter. He would strongly object to anything but a first-class structure with an attendant or attendants in charge. Anything else would be a failure. Probably such a place would cost between $10,000 and $15,000, but the upkeep would be relieved in some way by the returns from the washing facilities, etc. A small stand for the sale of tobacco and newspapers could also be worked in conjunction with the conveniences. The Council should certainly vote money for the purpose for public facilities were badly needed.

A new heating system will be installed in the public building at Renfrew.

At a recent meeting of the Winnipeg Board of Control, H. E. Penny, of Weston, told the members that a number of storekeepers in Weston were interested in a project for the erection of a gymnasium and swimming bath and asked if the city was prepared to take a grant. Controller Waugh announced that it was his intention to ask the legislative committee to submit a by-law to provide money for this purpose.

Tenders will shortly be taken by A. E. Blackmore, Vancouver, for the construction of a combined bath house and promenade at a cost of $26,000. There will be eight shower baths.

Hamilton's Public Comfort Station

The City Has a Modern Convenience, But it is in a Poor Location—Need for Another on the Gore Park in the Centre of the City.

Hamilton has but one public comfort station, and it is situated on Central Market Square to the rear and a little north of the City Hall, in the heart of the city. If it were said that Hamilton boasts of having such a public convenience that would be untrue, for it is a regrettable fact that the people of Hamilton have not been educated to the value and the necessity of such places to a sufficient degree to appreciate them. It may safely be said that a percentage of the population hardly knows the place is in existence, and a large proportion of those who do know of it shun it. And yet the Ambitious City has one of the most up-to-date and complete public comfort stations in Canada. The only detracting features are that it is too small, and that it is an obscure location. Situated as it is near the market, it is patronized largely by farmers, by the more common classes of citizens, particularly men, in the day time, and at night by large numbers of men of all classes who frequent the theatres in the vicinity.

This public comfort station was built in December, 1904, by the Markets, Jail and Police Committee, of the City Council, at a cost of $6,457. Its erection was the outcome of an agitation on the part of the Board of Health to compel the city to do away with an old frame building situated in the same locality and used for a similar purpose on the

Public Lavatory on the Mark et Square at Hamilton.

grounds that it was a menace to health. The old building, although floored with cement was so soggy that it reeked with the vilest odors and was an abomination. It took a long time to stir the Council into action, because the City Fathers looked upon such a place as something that was not to be flaunted to public notice by the erection of a good-sized and handsomely fitted up building, and when the comfort station was erected it was unfortunately placed where it would be the least noticed.

The building is situated on the market place between two streets, and is accessible from the market. Efforts to have it placed parallel with the sidewalk on York Street, one of the principal thoroughfares in the city, and a few rods from the City Hall, met with the condemnation of the aldermen and city officials, while an offer to compromise by erecting it on the other side of the market on Merrick Street, met with a similar fate. It was thus that it came to be situated where it is. The building is of red brick, two storeys high, and only 20x26 feet. In shape it is oblong and is entered by two doors at either end of the building, one for the women and the other for men. The ground floor is fitted up for men, and the upstairs for women. The entire interior is comparatively bright, airy and devoid of all odor. The walls are of glazed brick and the floor of concrete, while the plumbing and fixtures are the most modern. In the men's department there are seven urinals on one side of the room and seven closets on the other. Two of these are pay closets, provided each with wash basins, soap and towels, but they are not much used. In one end of the room is a slop sink and the floor is graded and drained so that the whole interior can be washed with a hose, if necessary. Upstairs there are five closets and a compartment for the accommodation of the lady attendant.

The plumbing was all made to order by the J. L. Mott Iron Works, of New York, and it is all exposed. The Durham system of piping is used and the connections are all screw joints, so that there is not the slightest escape of sewer gas. The pipes are all of galvanized iron and are so strong that it would be almost impossible to clog them as they will stand great flushing pressure. The urinals are the "Sanito," all porcelain and automatic flushers. They are durable, absolutely non-absorbent, and require no disinfectors working in connection with them. There is positively no smell from them. As for the closets, they are in keeping with the rest of the place, and are ventilated. This is probably one of the best and most important features of the station. They are all connected direct with a main ventilation pipe, which runs along the ceiling and are automatically flushed. The urinals, too, are all ventilated in this manner, so that there is little chance for any unpleasant odors.

The building is lighted by electricity, and, with the exception of the roof and window frames, is absolutely fireproof. Two attendants are kept all the time, and a strict compliance with the rules is exacted from those using the station. Despite the fact that the station does not occupy the important position in the minds of the people that it ought to it does not mean that it is not largely used. The men's department is in the greatest demand and it is safe to say that about 600 people use the convenience a day. Yet this is not a large percentage for a city with 70,000 population and Hamilton could well afford to have one or more of these stations. James Balfour, the architect who built the station, is highly in favor of having such a convenience underground in the Gore Park extension, which he feels sure could be made ornamental as well as useful. His work on the present comfort station has been highly approved of and deputations from many cities have viewed it for the purpose of getting ideas. Among these was a deputation from Kansas City, which inspected the building soon after its erection. J. Walsh had the contract for the plumbing and steamfitting, including a boiler, which amounted in all to $3,698.

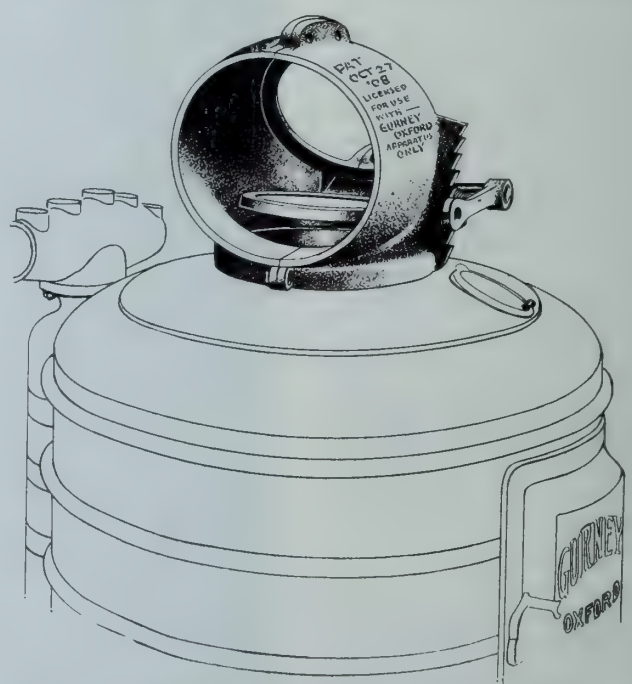
Miss Birdie Eva Trim, of Aylmer, and Foster Cook, master plumber, of St. Thomas, were married at the bride's home on February 18.

ECONOMIZER FOR HOT WATER BOILER.

A recent invention of interest to plumbers, steamfitters and all interested in heating questions generally is the "economizer" attachment for boilers now shown by the Gurney Foundry Co. at their Toronto show rooms. The device was patented last October, and is as yet only made in two sizes, though it will be made in all sizes and ready for the market before next season.

At present the "Oxford Economizer"—to give the attachment its full and correct name—is licensed for use on Gurney Oxford hot water boilers only, though it is understood that by some slight modifications it will be made available for hot air furnaces as well.

The idea of the "Economizer" was suggested whilst other experiments were being tried. As can be seen in the illustration the attachment is placed on top of the boiler just where the smoke pipe connects, thus allowing for a current of cold air to draw off the gases and force them up the pipe without at all cooling the water coils inside, as is the case with the ordinary boiler which has a vent in the top over the water coils. The "Economizer" controls all drafts and does away with the necessity of using or depending on the pit doors and dampers.



New Device Being Attached to Gurney Boilers.

The economizer has been tested in a few houses in Toronto, and, from accounts, is satisfactory. It is claimed for it that the economizer lessens fuel consumption, as at least one-third of the winter season the heater is closely damped and invariably the fire door is kept open.

Combined Warm Air and Hot Water Heating.

Report of Committee Composed of J. J. Blackmore, Chairman, and J. A. Donnelly and Geo. B. England, Presented to the American Society of Heating and Ventilating Engineers, New York, January 19.

The accompanying plans, from The Engineering Review, show a combination warm air and hot water heating instalation in the residence of H. M. Howe, Professor of Mines at Columbia College, situated at Bedford, N.Y.

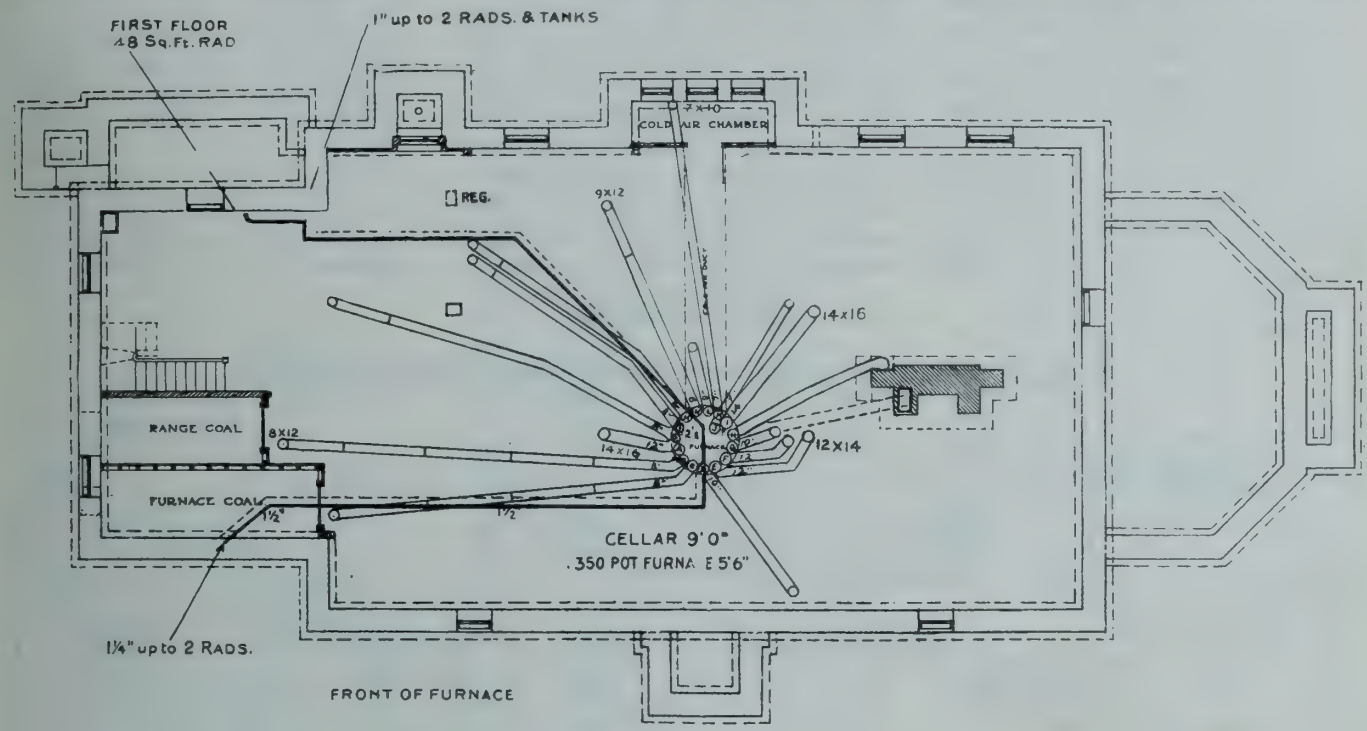
The house is two stories, located in a hollow and exposed on all sides. It is constructed of stone with reinforced concrete floors and iron girders, being practically fireproof except for wood partitions.

All of the rooms are heated by warm air, except the servants' hall, on the first floor, and three bedrooms and bathroom on the second storey.

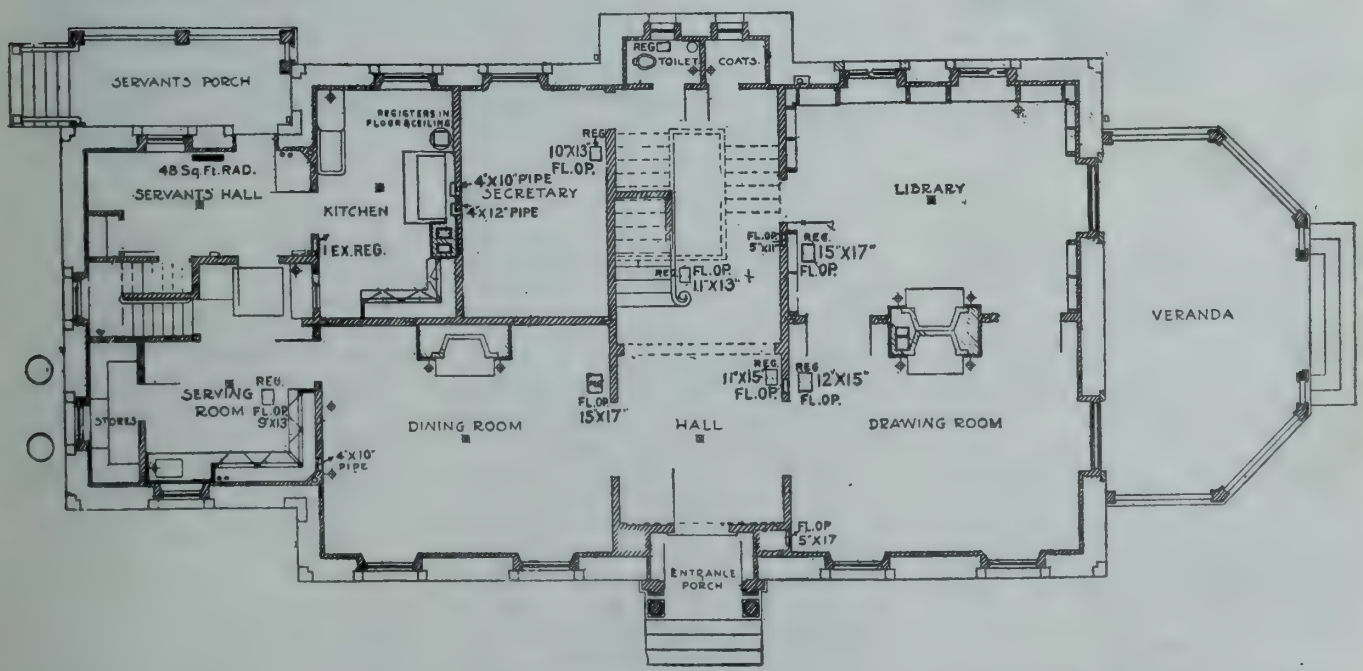
A No. 350 Series "A" Combination Warm Air and Hot Water Portable Furnace made by the Fuller & Warren Co., N.Y., was installed.

The manner of running the warm air and the hot water pipes is clearly shown on the cellar plan.

The cold air chamber is located on the north side of the house and is connected to the furnace by an overhead cold air box, made of No. 24 galvanized iron. It is provided with cleanout



CELLAR PLAN.



First Floor Plan.

doors and dampers and has a heavy galvanized wire screen over opening.

The warm air pipes are IX. bright tin, and are kept 1 inch from all woodwork, which is also covered with tin.

The horizontal runs, except those exposed in the cellar, are made double with ½ inch air space, and have braces to keep the distance between pipes.

Dampers are provided on all of the warm-air pipes near the furnace.

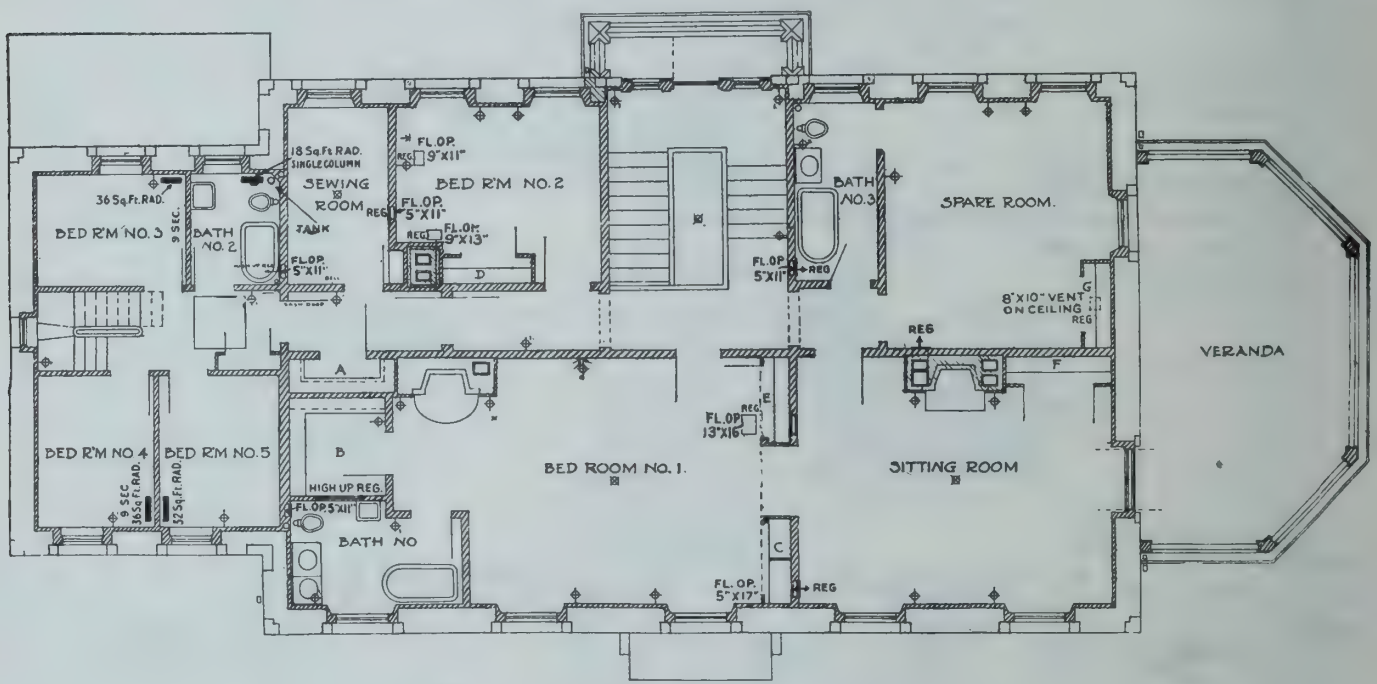
Pipes placed in partitions are covered with 16 pound asbestos paper and the studs are lined with bright tin.

All of the horizontal pipes are covered with one ply air cell asbestos secured with metal bands.

The registers throughout, except the wall registers as noted below, are of Tuttle & Bailey's manufacture, electroplated in either bronze, copper or brass, with borders to match, and of design especially selected by the architects. Wall registers occurring in plastered walls are of white enamel.

The pipe to bathroom No. 2 has an additional register opening from the kitchen near ceiling to heat bathroom from kitchen when furnace is not in use.

The building was erected from plans by Babb, Cook & Willard, Architects, New York; Fuller & Warren Co. combined heater was installed by John W. Ashley, 113 Beekman Street, New York, for the Fuller & Warren Co., Troy, N.Y.



Second Floor Plan.

SUPPLY BUSINESS CHANGES HANDS.

H. J. Wood, manager of the Toronto branch of the Labatt Mfg. Co., has resigned his position and severed his connection with that company; and that Chas. Nostrant, office manager at the same branch, has also resigned and returned to Buffalo. The changes came as a complete surprise to the trade, as it was understood Mr. Wood would buy out the Toronto interests of Labatt & Co., and for that purpose last November a company was formed under the title of H. J. Wood, Ltd., to take over the Toronto end of the business. The matter of transfer was awaiting the decision of Labatt & Co.'s directors, but the meeting, which was to have been held some weeks ago, was not called in London until February 23, when Mr. Wood made his offer. That meeting could not come to a decision and was adjourned to Toronto. Evidently Mr. Wood's offer was not accepted, as after half an hour's deliberation the meeting concluded

Mr. Wood resigned and it is said he will enter the gas appliance business at Buffalo.

Following this change comes the announcement that the Labatt Co.'s interests in Toronto have been sold to the former manager of another Toronto supply house, but the supposed purchaser says the deal is not yet closed.

A further announcement is expected in the next fortnight regarding a deal which it is said will result in the amalgamation of four brass manufacturers and supply houses, Somerville, Limited, the General Brass Works, the Labatt Manufacturing Company, and the Empire Brass Company. Asked for information on the subject, Fred. Somerville said money would buy anything these days, but he had nothing to announce at present.

Mr. Wood is a Canadian by birth, and for a time worked at the plumbing trade in Kingston. Later he went to Buffalo, where he established a large plumbing business and was for some time an officer of the New York State Master Plumbers' Association. Less than a year ago he located in Toronto, and took the position of manager for the Labatt Mfg. Co.

PLENTY OF STOCK.

A proprietor of a store was a man of most excitable temperament, and was forever scolding his clerks for their indifference in the matter of possible sales.

One day, hearing a clerk say to a customer, "No, we have not had any for a long time," the proprietor, unable to countenance such an admission, began to work himself into the usual rage. Fixing a glassy eye on his clerk, he said to the customer:

"We have plenty in reserve, ma'am, plenty downstairs."

Whereupon the customer first looked dazed, then burst into laughter and quit the store.

"What did she say to you?" demanded the proprietor of the clerk.

"'We haven't had any rain lately.'"

MacGregor & Reid, electricians, Peterboro, entertained their staff of employes to a banquet at Coleman's restaurant a few nights ago. A hearty vote of thanks was passed to the employers at the conclusion of the banquet, which proved an enjoyable affair.

With Our Correspondents

The Editor does not hold himself responsible for the opinion of correspondents. Short, crisp letters will be appreciated. To insure publication, the name and address of the writer must accompany the communication, not necessary for publication. Sketches of work or methods will receive our earnest attention. These columns are open to our readers at all times without charge, and any questions or experiences will be given proper space.—Editor.

THE LICENSING OF PLUMBERS.

"An agitation has sprung up in Winnipeg having for its object the licensing of all plumbers by the city. It is contended that such a system of licensing is necessary in the interests of the health and safety of the public, quite as much as the licensing of milkmen, ice dealers, laundries, abattoirs, and the like. Col. Ruttan, the City Engineer, is opposed to the plan because it would throw responsibility upon the city which properly belongs to the master plumbers, and that under a system of licensed journeymen the master plumbers would be enabled to offer as an excuse for any poor job that it was performed by a man licensed by the city, and, consequently, must be all right. If anyone is to be licensed in the interests of the public health and safety, it should not be the journeymen, but the master plumbers. No one would seriously propose licensing the driver of a milk wagon, or an ice wagon, or a laundry wagon, or a man working in an abattoir. Yet it would be as sensible as to license a journeyman plumber, who, under proper supervision can do no more harm than any of the classes of employes mentioned above. The truth of the matter is the license scheme belongs to the plumbers' union, and is merely a method adopted in a number of cities under the guise of concern for the public health, for the purpose of enabling the union to secure and retain control of the men engaged in the trade. This system of licensing is growing too fast for the good of the public. One can easily trace its effects as a means of coercion, but its benefits are never glaringly obvious from the public standpoint." — Montreal Gazette.

* * *

Editor Plumber and Steamfitter:

The above is a clipping from the Montreal Gazette. Comment is unnecessary, except to say that it is no wonder that the sanitary condition of Montreal is in the state it is when a journeyman plumber—a first-class mechanic, who must serve an apprenticeship of five long years, and in addition must have as much brains and be able to use them as well as the average professional man—is compared to the driver of an ice wagon or a milk wagon. Where is the master plumber, be he ever so clever, who employs from five to twenty-five men, who can supervise personally all the work. Go into any large building in the course of construction and you will find a journeyman plumber in full charge who is personally responsible for the instalation of work worth thousands of dollars. The men under him, too, have to be just as clever, for mistakes made in the instalation of plumbing work cannot be estimated in dollars and cents, but may have to be paid for in human life. Then why compare a man with this responsibility to the driver of an ice wagon?

It is an admitted fact that plumbing work installed by incompetent men is a menace to the public health. When this is so, why not make it impossible by legislation for such work to be done? Make the journeyman who has actual charge as responsible as the master, make him prove by an examination that he is capable of carrying out the work ordered by the master plumber. The assertion has been made that the inspection made of the work by the city inspectors will safeguard the public. That may be so in some cities, but does not hold good in Montreal. The appointment of plumbing inspectors in Montreal and other cities, and the work done by them, is a farce. It is one more example of our splendid system of municipal government, and is an office where patronage can be distributed with a free hand. Imagine men appointed plumbing inspectors to inspect new work who were never inside a building in the course of construction until they received their appointment from the City Hall! Those are the men who are made judges as to whether plumbing work is installed properly or not, and to advise men who have spent a lifetime studying the business, and who admit that they are learning something every day.

H. J. CLAYTON.
Licensed Plumber.
Montreal.

A STANDARD FOR PLUMBING MATERIAL.

By E. Willard, Kokomo, Ind.

Has the plumber and all his allied interests been benefited by the mystery that has always shrouded plumbing? As a salesman calling on architects, an interested party in a concern manufacturing plumbing material and a bearer of that indelible stamp, "plumber," of which I am proud, I say, "No."

How often Mr. Architect has been referred to as being dependent on such and such a plumber for his plumbing knowledge. And also the manufacturer who, until the last two or three years, has been compelled, through sentiment, to introduce his wares to the public at large through the plumber. The plumber, an individual whose scope of operation is local and of necessity restricted, permits ego to sway his sentiment, which does not generally promote the uplifting and upbuilding of the plumbing business. This statement I make with all due deference and use it not in a comparative sense, but simply to show conditions as I see them.

I make this prophecy, grounded on lines paralleling our own (heating, for illustration) that magazines will continue to increase the planning of advertisements of different lines of material entering into plumbing construction, which to the members of this society, whose combined ability is supreme and unquestioned, may or may not meet with favor. Hence the necessity of, and the demand for, a schedule or code setting forth the standard of all material entering into the plumbing business.

Kind Not Make of Apparatus.

This, on its face, seems an arduous and unsurmountable task, and would be were it to embrace each point of merit claimed by the manufacturer of a certain ware as being better than his competitor's. This, however, is not the intent. By way of illustration and in the form of suggestion, take traps. No greater abuse of the plumbing business has been fostered on the public than the permitting of the plumber to use any style of trap he chose. Hence a code setting forth a certain kind (not "make") would eliminate the practice.

I might go on and take almost any article or articles that are made competitively without a set standard for base. They look all right and their instalation is permitted, but in a short time they develop defects and the public unwaringly permits the practice to continue, not benefited, mind you, from their experience. They simply permit it to go on and on, and will continue to do so until a schedule is set forth making compulsory a standard that must be attained and maintained both from a standpoint of efficiency and of durability.

The benefit of such a schedule would be far-reaching in its entirety, benefiting, first, the public; second, the honest manufacturer, compelling the "just as good a one" to be good; and compelling the plumber to conduct his business

along the lines of conventionality that would permit him to become a business man unconsciously, removing that stigma "dishonesty," generally coupled with the word "plumbing" in its entirety.

Standardizing to Be Done by Society.

In conclusion, this to me seems possible, and demand makes it a necessity, and is a movement in the right direction that will have the hearty co-operation and concurrence of all the allied interests of plumbing, which, I am advised, are waiting for the initiative to be taken by those that are competent to judge and to me they and those are no better qualified than the American Society of Plumbing Inspectors and Sanitary Engineers.

And I would suggest that this society at its meeting here at this time appoint a committee to take this matter up with the manufacturers and jobbers of plumbing material and also the American Institute of Architects, and make an effort to create an interest whereby we may have legislation enacted that will give us laws calling for a minimum of standard for all material entering into the construction of sanitary work, thereby enabling the plumbing inspector to have a set of rules to go by when he goes to inspect a job of plumbing. He could not only see that the work was done properly, but that the material used is up to a standard protecting the public, the architect, the manufacturer and jobber.

STRATFORD'S NEW FILTRATION PLANT.

The accompanying illustration shows the new mechanical filtration plant at Stratford before the house was built over it. There were two rising mains from the pumphouse, and the tanks are located above and between them, so that feeding the city through either main delivery could be made into the whole or any number of the filtration tanks, or from the whole, or any one tank into either or both of the mains.

Also below ground and not shown in the illustration are straightway bypass valves permitting the water to go through the rising mains direct from pump to city, if any part of the filtration equipment should be accidentally out of order, when the demand came for a large supply of water to fight fire with. However, the tanks are designed for and have properly purified at the rate of a million and a half gallons per day.

In operation the unfiltered water enters the tanks by the high level cast iron pipes and the filtered water exits into either or both the mains by way of the low level pipes just above the floor. And when washing out the dirt escapes to the drains down by the upright pipes to the right hand of each tank, these upright drain pipes are cut off short of the floor some six or eight inches and deliver into open funnels or hoppers leading direct to the tile sewer, so that the condition (color) of this escaping effluent is under the eye of the man controlling the wash-out valves.

There is a depth of 3½ feet of filtering material used in each tank, crushed quartz, varying from about 5-16 to ⅜ cubes at bottom to quite fine sand at top, and this material re-arranges itself in proper position, and without measureable waste of sand, if the washing-out back pressure is now allowed to go over 40 pounds.

As is common with all mechanical filtration, a small amount of one of the many forms of alum is used to deposit a flocculent coating on the top of the fine sand, forming one of the best of filtering mediums.

This material is dissolved in an open 2-foot cube box, gravitating into a lower open reservoir or mixer of the same size where its strength (density) can be tested by a hygrometer.

From thence it gravitates to an impulse pump at floor level in pumphouse, whose strokes always correspond exactly with those of the main pump so that the supply uniformly varies with the variation of the main pump, and as its delivery is into the main suction pipe this fluid gets well mixed in passing through the pump barrel and valves on its way to the perforated distributing pipes at top inside the tanks.

It is very improbable that the sand under these conditions will get charged with bacteria, but if ever suspicious of such a state it is arranged that the sand will drain, and then full pressure boiler steam be passed upwards through the quartz (in the same way as the wash-out water), easily raising the whole to 212 degrees, a bacteria killing temperature.

The cost of this whole plant, capable of 150 pounds pressure, with a large white and red brick house, cement foundations and floor and a slate roof was barely $11,000, believed to be the least expensive plant of its kind ever erected in Canada.

The metal work was by Park Bros., Chatham, the plant being designed by J. D. Barnett, chairman of Stratford's water commission.

Filtration Plant at Stratford Before Being Housed In.

A SURPRISING QUESTION.

It is not always a guilty conscience that is taken by surprise, for sometimes the most innocent of men will start at a suspicious word. The following incident, which occurred in a hardware shop, is illuminating:

An elderly lady, dressed severely in gray and carrying what looked very much like a bundle of tracts, approached the counter.

A clerk hastened to serve her.

"What can I do for you, madam?"

She leaned toward him. "Have you —er—any little vises?" she inquired.

Rhodes, Curry & Co., Halifax, have been awarded the contract for erecting a large bungalow for a party of Americans at Argyle, N.S. The price is $30,000. Some idea of the bungalow may be gleaned from the fact that there are to be seven bath rooms and ten lavatories in the building.

NEWS OF THE TRADE IN CANADA

G. & E. Blake have the plumbing contract for the new Seaman's Institute at St. John.

Belleville plumbers report business dull, the mild weather being held responsible.

Some 28 cases of smallpox are reported in the Standard Ideal Co.'s factory at Port Hope.

The Standard Fitting & Valve Co., Guelph, has increased its capital from $100,000 to $200,000.

W. Stevenson & Co., plumbers, Winnipeg, have been registered, with Edith Kate Glenwright as proprietress.

J. H. Crow, Welland, was the successful tenderer for the plumbing of four houses to be built there by B. J. McCormick.

W. W. Near, managing director of the Page-Hersey Iron & Tube Company, Guelph, left last week on a two months' trip to Europe.

W. L. Helliwell, manager of the Gurney Foundry Co.'s branch at Winnipeg, is receiving congratulations. It's a girl—this time.

A. J. Jackson, Ontario agent for the Amherst Foundry Co., is renovating his Toronto storehouse and making a large, well-lighted show room in the front part of the establishment.

Mr. Fortier, plumber, Cooksville, Que., sustained serious injury a few days ago at Lemay's Mill, 6th Range of Spaulding when his axe slipped cutting a very deep and long gash in his knee.

Chas. Bernier, Montreal, has awarded to Eiendeau & Soly the contracts for roofing, cornice work, plumbing, gas and electric work, and hot water heating, for three tenement houses to be erected at that place.

McKenzie & Roy, electricians, Lethbridge, are dissolving partnership. Mr. McKenzie will remain in business in the premises at present occupied by the firm and Mr. Roy will open up a separate office.

Chas. Black and Chas. Lusby, of the Amherst Foundry Co., Amherst, N.S., were visitors to Toronto last week, looking after their business in Ontario. They visited as well, on business bent, Ottawa and Montreal.

Ed. Mackness, plumber and gasfitter, has opened a shop in the premises at Chatham, Ont., formerly occupied by Mr. Clements. Mr. Mackness has been in business for a year or more, but this is his first down-town office.

Contracts for supplying the requisites for the waterworks in Vancouver have been let by the City Council as follows: Galvanized pipe, Crane & Company, Vancouver, $2,745.50; lead pipe, Robertson Godson Company, Vancouver, $1,720; brass goods, Chadwick Bros., Hamilton, Ont.

Thomas Southworth, who has resigned as Director of Colonization for the Ontario Government to become secretary-treasurer of the King Radiator Company, Toronto, was presented by the staff in his department with a Morris chair, and by the other members of the civil service with a traveling bag.

Journeymen Plumbers' Union No. 479 (Steamfitters), Winnipeg, has elected the following list of officers for the ensuing year: President, P. Cann; Vice-President, T. Petrie; Recording-Secretary, F. H. Cotton, 780 Logan Avenue; Treasurer, R. Gill. The meetings are held on the 1st and 3rd Monday in each month.

Somerville, Ltd., Toronto, are making some changes about their establishment by altering the location of some of the departments. The general office, sales departmnt, show rooms, and shipping department will all be centralized at the front of the house, so that the various heads may be in close communication at all times with the manager.

Recently the Page Hersey Company, at their rolling mills at Guelph made a world's record run, turning out 7,551 lengths of half-inch pipe in 10 hours. The previous record to this was made by the Spang Chalfont Mills at Etna, when they made 7,500 lengths, which was 53 lengths more than the biggest run made by the United States Steel Corporation's big plant at Loraine, Ohio.

The Labatt Manufacturing Company, London, is at present negotiating with several American concerns, including a large Milwaukee firm in the wholesale plumbers' supply business for the purchase of the Labatt Brass Works. It is expected the deal will go through and the transfer made in a short time, in which event the American firm will begin operations without delay.

Alexander & Miller, electrical contractors, Peterboro, have just completed the wiring of the new store which the Knox Co. opened up there a week or so ago. They have also finished the wiring of the new Bank of Montreal building, in Sterling, and the building of the same bank at Trenton. They were also responsible for the wiring of the new St. James Methodist Church, Peterboro, which will be opened this summer.

London the less was a great centre for heating salesmen on February 17. F. H. Alexander, Ontario advertising representative of The Plumber and Steamfitter, was on the ground, and in addition to E. J. Laidlaw, of the General Brass Works, Toronto, and S. T. Hadley, of the James Morrison Brass Manufacturing Company, Toronto, he noticed the following: R. J. Cluff and J. Wilson, King Radiator Company, Toronto; E. H. Gurney and C. E. Oldacre, Gurney Foundry Company, Toronto; George Allen, Taylor Forbes Company, Guelph; F. E. Ellis, Gurney-Tilden Company, Hamilton; Tom Worthington and J. Glennister, Dominion Radiator Company, Toronto. Rumor says tenders for a cottage heating system were to be received at London that day.

Sixty-two shareholders of the defunct Niagara Falls Heating & Supply Company have been served with notice to appear before Judge Wells at Welland on March 8, to show cause why they should not be further assessed as contributories. It seems that in every case a shareholder was given twice the amount of stock he applied for, and now that the concern has gone under the liquidator is asking that the shareholders pay for the stock thus donated—the shareholders having paid for only what they applied for. A meeting of the majority of those thought to be held liable was held at Land's Hall, Niagara Falls South, a couple of days ago. Wm. Phemister, postmaster, was elected chairman, and J. G. Cadham secretary. A resolution was unanimously passed authorizing Griffiths & McGuire to appear for all the alleged contributories, and contest the right of the liquidator to hold them liable.

Hamilton & Stott, St. Thomas, have recently installed the following heating plants: St. Joseph's Convent, No. 6 Daisy hot water boiler, King radiation; D. Meadows, Roseberry Place, No. 3 Daisy hat water boiler, King radiation; Irvine McNiece, Roseberry Place, No. 3 Daisy hot water boiler, King radiation; Dr. McLarty, No. 4 Daisy hot water boiler, King radiation; F. M. Griffin, combination hot water boiler, King radiation; Fred. Sutherland, Pearl Street, No. 4 Daisy hot water boiler, King radiation; Dr. Fitzimmons, No. 37 Viking, hot water boiler, King radiation; Archie Berdan, corner Forest Avenue and First Avenue, No. 3 Daisy hot water boiler, King radiation; R. McLaghlin, Glencoe, No. 6½ Daisy hot water boiler, King radiation; J. Hurst, Glencoe, No. 3 Daisy boiler, King radiation; Mr. Bechley, Horton Street, No. 15 Viking, boiler (hot water), King radiation. The firm lay out and make their own plans for hot water, steam and hot air heating plants.

BRASS PRICES ADVANCE.

At a meeting of the Canadian brass manufacturers at Toronto last week steps were taken to stop the price-cutting in plumbers' brass goods.

As has been well known in the trade, brass manufacturing has been considerably overdone in Ontario, and in spite of the liquidation, burning and closing down of several plants prices have been forced down to about 16½c per pound for brass castings, little more than the cost of the raw material,

In one large brass foundry the financial backers placed an expert "cost" man to investigate the situation and on his securing the management he arranged for a meeting to discuss the situation, the result being the commom-sense decision to establish a higher list.

WHY THE SALESMAN FAILED.

He wasn't neat in his appearance.

He lacked dignity in his bearing.

He used no tact in introducing himself.

He was late in keeping his appointment.

He had a conceited and arrogant manner.

He did not believe in his own proposition.

He disgusted his prospect with gross flattery.

He didn't know the fine points of his own goods.

He offended the prospect by undue familiarity.

He made a bitter attack upon his competitor's goods.

He openly ridiculed his prospect's ideas and methods.

He made no preliminary study of his prospect's case.

He relied on bluff instead of solid argument based on facts.

He got lost in the forest of details and couldn't stick to essentials.

He had been out with the boys the night before and showed the effects.

He talked too much. He gave his prospect no chance to explain his needs and position.

He couldn't answer questions and objections intelligently, concisely and convincingly.

He tried to close his prospect before he had worked him up to a point of conviction.

He lost his nerve because the prospect presented such an unyielding front, forgetting that battles are won by hard rallies at the finish.

He didn't know his business when he made the approach; didn't talk clean-cut business after he got in; didn't make it his business to fight all the way through, and didn't do business before he left.—H. G. Nye.

CONTRACTS AND BUSINESS OPPORTUNITIES

Municipal Undertakings.

Revelstoke's, B.C., sewerage system will cost about $43,000.

Kingston may extend its waterworks mains to all parts of the city, at a cost of $35,000.

Sydney, C.B., will spend over $90,000 in sewers, water extension, bridges. fire station, etc.

A by-law will be submitted shortly to the ratepayers of Thorold to raise $15,000 for waterworks.

Peterboro's water commissioners advocate installing a new waterworks plant, to cost $120,000.

Fort Erie, Ont., ratepayers will, on March 15, vote on a by-law to raise $50,000 for waterworks.

Estevan, Sask., ratepayers will probably vote on a by-law to raise $30,000 for fire protection purposes.

Leamington business men are arranging to heat their stores with exhaust steam from the electric light plant.

A by-law will probably be submitted to the Pembroke, Ont., ratepayers to spend about $125,000 for a water system.

Toronto civic authorities have installed a 1,000 gallon pump in the engine room at the city hall for fire protection purposes.

Notre Dame de Grace, Que., is considering borrowing $350,000 for the purchase of the water system of the Credit Municipale.

Montreal is considering establishing a filtration plant.

Hamilton is buying land for its west end sewage disposal works.

Exeter, Ont., is thinking of constructing a waterworks system.

Wetaskiwin, Alta., will instal a waterworks and sewerage system this year.

Winnipeg's proposed new sewerage system is estimated to cost $7,000,000.

Tenders are asked for supplies of cement and sewer pipe required by Brantford for 1909.

Verdun's $50,000 water supply system is being rapidly pushed and is expected to be finished by June.

Point Grey, a suburb of Vancouver, will have to be drained by trunk sewers running through Vancouver.

The Gartshore-Thomson Company received the contract for supplying the iron castings required by the Hamilton sewers department, at $1.95 a hundred pounds.

A. Mercer, Hamilton, was given the contract at $2,175 of laying an iron pipe down the side of the mountain at Hamilton to connect the mountain and city sewerage systems.

H. A. McLean and A. W. Kelly, of Sarnia, have been inspecting the Chatham Steam Heating Co.'s central heating plant. A similar heating system is in contemplation for Sarnia.

Tenders are asked for materials for Saskatoon's waterworks and sewerage works as follows: Cast iron pipe and specials, 280 tons; fire hydrants, gate valves, etc.; sewer pipe, 20,000 feet; pumping machines.

Dominion, C.B., ratepayers authorized the town council to borrow $20,000 for the instalation of a permanent water supply. The water will be supplied by the town of Glace Bay from their standpipe at Cadegan's brook.

A company has been formed to make a daily delivery of a million and a half feet of gas in Welland and St. Catharines, for industrial purposes, at a rate of 25c per thousand feet. The promoters state that at this price it is much more economical than other fuel. Options on gas wells at Selkirk have been secured by the company, which is backed by local capital.

Arrangements have been concluded between Revelstoke, B.C., and T. F. Sinclair for the construction of the central section of the sewerage system in that city. The question of what material will be used for pipes and other matters relating to filter beds, septic tanks, etc., will be taken up immediately. Work will be commenced about the middle of April.

Dominion Public Works Estimates.

The following are the estimates of the Public Works Department of cost of work necessary to be done on public buildings in Canada during 1909:

Nova Scotia:—Amherst Public Building, improvements, $2,000; Bridgewater, public building, $6,000; Glace Bay, public building, $12,000; Guysboro' public building, improvements, $1,200; Halifax Dominion building, improvements, $75,000; Halifax Dominion buildings, improvements, $4,000; Halifax, immigrant detention building, hospital, $2,500; New Glasgow public building, improvements, $1,000; Pictou public buildings, $2,000; Shelburne, public buildings, $19,000; Westville, public building, $5,000.

Prince Edward Island:—Georgetown, public building, $7,000.

New Brunswick:—St. John Dominion buildings, improvements, $4,000; St. John drill hall, $12,500; St. John quarantine station, Partridge Island, water service and improvements, $3,000; Tracadie lazaretto, sanitary works, $2,000.

Maritime Provinces, generally:—Dominion public buildings, $15,000.

Quebec:—Cookshire post office, $15,000; Dominion public buildings, $20,000; Grosse Isle, quarantine station, improvements, $5,000; Joliette armory, $15,000; Knowlton, public building, $12,000; Lachute, public building, $7,000; Magog public building, $14,000; Montreal, Eastern Postal Station, $10,000; Montreal, examining warehouse (old), $20,000; Montreal, General Post Office, enlargement, $127,000; Montreal, new postal station at Point St. Charles. $40,000; Montreal public buildings, improvements, $8,000; Pierreville public building, $2,000; Plessisville public building, $18,000; Quebec Citadel, drill shed for school of gunnery, $45,000; Quebec immigration buildings, additions, $13,000; Quebec post office, $13,000; Quebec East public building, $50,000; Quebec Province immigrant buildings generally, $5,000; St. Johns public building, $6,000; Sherbrooke drill hall, $45,000; Three Rivers new public building, to replace building destroyed by fire June 22nd, 1908, $40,000; Valleyfield public building, improvements, $2,000.

Ontario:—Belleville armory, $15,000; Brantford drill hall, $3,000; Cornwall public building, $1,400; Dominion public buildings, $20,000; Fort William public building, enlargement, $11,000; Glencoe public building, $26,000; Hamilton drill hall, addition, $37,000; Kincardine, public building, $15,000; Kingston Royal Military College, $57,000; Kingston Royal Military College, $15,000; Kingston Veterinary Hospital, $15,000; Leamington, public building, $23,000; Markham, public building, $10,000; Ottawa, buildings for testing of fuel by Department of Mines, $15,000; Ottawa Departmental buildings, $50,000; Ottawa Departmental buildings, improvements in lavatories, plumbing, etc., $10,000; Owen Sound public building, $20,000; Parkhill public building, $20,000; Peterboro' armory, $37,000; Renfrew, public building, $16,000; Simcoe, public building, $20,000; Toronto Dominion buildings, improvements, $5,000; Toronto drill hall, $25,000; Toronto Meteorological Observatory, $44,000; Toronto military buildings, magazine, $1,500; Toronto Post Office, additions, $25,000; Welland public building, $33,000; Whitby public building, $28,000.

Manitoba:—Dauphin public building, $24,000; Dominion public buildings, $10,000; Emerson, public building, $31,000; Neepawa, public building, $20,000; Winnipeg Dominion buildings, improvements, $5,000; Winnipeg examining warehouse (new), $175,000; Winnipeg Post Office (old), $25,000.

Saskatchewan, Alberta and Northwest Territories:—Dominion public buildings, $10,000; Edmonton public building, $75,000; Estevan public building, $25,000; Lethbridge Custom House and Dominion Lands office, new heating apparatus, sanitary works, plumbing, etc., $4,000; Maple Creek, public building, $10,000; Prince Albert, Saskatchewan penitentiary, $65,000; Saskatoon public building, $32,000; Yorkton, public building, $31,000.

British Columbia:—Dominion public buildings, $8,000; Fernie public building, $25,000; Ladysmith, public building, $17,500; Prince Rupert, quarantine station, $25,000; Vancouver, public building, $60,000; Victoria immigration building, $43,000; Victoria Post Office, $3,000; Williams Head quarantine station, $5,000.

Yukon Territory:—Dawson, Yukon Commissioner's residence, $19,000.

Public Buildings, generally:—Construction of armories, $50,000; Experimental Farms, new buildings, $10,000; public buildings generally, $10,000.

Public Buildings.

A new school will be built at Runnymede, Ont.

St. Mathias Presbyterians, Montreal, may erect a new church.

A new court house will be erected at Woodstock, N.B., this summer.

The British-American Trust Co. will erect a fine office building at Victoria.

The T.&N.O. Railway station at Temagami, recently burned, will be rebuilt.

A new two-storey opera house will be erected at Leamington in the spring by J. M. Henry.

A Roman Catholic church and school, to cost about $65,000, will be built at Lacombe, Alta.

Land has been purchased at Waterloo, Ont., on which will be erected a new public building.

The excavation is about completed for the new five-storey office building to be erected by W. R. Hull at Calgary.

The Roman Catholics of Beaverton, Ont., are building a large church and manse this spring. Both buildings will be of red brick.

J. C. M. Keith, Victoria, has been asked to prepare plans for a new school to cost about $45,000, proposed to be erected there.

The Victoria School Board has appropriated $9,000 to put complete heating apparatus in all of the schools of that city not already supplied.

An important structure will be that to be erected by the Victoria civic authorities at English Bay beach and to be utilized as a bath house. The cost will be $25,000.

PLUMBING INSPECTORS' ANNUAL CONVENTION.

(Continued from page 8.)

Papers Read.

Amongst the papers read at the convention were the following:

"The City Plumbing Inspector in His Relation to the Health Office," by Dr. Ralph W. Connell, Health Commissioner, Omaha.

"The Plumbing Inspector and the Civil Service," by Frank W. O'Neill.

"Public Baths in School Basements," by R. S. Bemis, Providence, R.I.

"Public Comfort Stations," by John R. Allen, Chicago.

"Civic Sanitation," by Frank K. Chew, New York.

"Plumbing Plans and Specifications," by O. B. Craig, Pittsburg.

"Soil and Vent Pipe Design," By F. W. Tower.

"Why I Do Not Believe in 3-inch Soil Pipe Yet," by Charles M. McHugh, Cedar Rapids, Iowa.

"Cast Iron Pipe and Fittings, and Their Defects," by C. R. Schmidt, Baltimore.

"A Standard for Plumbing Material," by E. Willard, Kokomo, Indiana.

"From House to Sewer," by A. Rosewater, City Engineer, Omaha.

"Plumbing Systems for Schools, Hospitals and Prisons," by Frank Dumond.

"Plumbing for Schools," by Wm. G. Williamson, Detroit.

"School Plumbing," by T. J. Claffy.

"Prison Plumbing," by H. W. McVea, Omaha.

"Some Experiences in Schoolhouse Plumbing," by E. H. Donoghue.

"Toilet Rooms in Schools," by G. W. A. Butler.

"Recent Development in Water Closet Design," by W. H. Lloyd, Chicago.

"School Urinals in Washington," by H. B. Davis, Washington.

"Plumbing Design," by Charles B. Ball, Chicago.

"Features of Plumbing Design," by Wm. H. Jennish, Waterloo, Iowa.

"Drainage Pits for Garages," by Edward Quinn, St. Louis.

"Water Waste," by H. B. Davis. Washington.

"Sanitation on the Panama Canal Work," by C. L. Stockelburg.

"Roof Flashings," by Francis H. Wright.

"House Sewers and Drains," by Herbert F. Shade, Victoria, B.C.

"Soil, Waste and Vent Pipe Construction," by William Hey.

"Methods of Fastening a Roof Flange About a Soil or Vent," by J. B. Walker, Waterbury, Conn.

PLUMBING AND HEATING MARKETS

MONTREAL.

February 26.—Supply houses generally seem to be stocking up well, and it is evident that good spring trade is anticipated. The feeling is growing stronger that building will be extremely good, not only locally but in other parts of the Province. Three Rivers, for instance, is offering some fine contracts, and the supply houses are keeping in close contact with the place. Architects continue to be very busy, and if only half of the plans materialize there will be plenty of work offering for the plumbers, and plenty of trade for the supply houses. Although the cut in steel in the States is not likely to affect home products, it is thought that with certain kinds of structural material cheaper, building will be stimulated. There is no doubt that prospective landlords will never get a better chance of building cheaply than they have now. The market is commencing to stiffen, and those who do not come in this spring will miss a great opportunity.

There is no change of any importance to note in the markets. Soil pipe orders are very encouraging, and there is a better movement in lead pipe. Brass goods are firm despite the state of the copper market, and somewhat dull trade. Heating lines are quiet, but some fair orders have been taken for future delivery. Iron pipe is firm, and unless there is cutting among home producers there will be no change on account of prices in the States, as only the large size pipe enters the country.

IRON PIPE—Some very good orders have been received awaiting April shipment. The market is firm, and there is no change in quotations. The cut in the States will not affect prices here. We quote ½-in. black, $2.63 ; galvanized, $3.48 ; 1-in. black, $5.11 ; galvanized, $6.76.

SOIL PIPE—Orders for immediate as well as future delivery are showing much better strength, and there will be a strong movement prior to the commencement of the building season. Prospects look extremely good. Although a change in discounts seems to be impending, we still continue to quote : Light, 3 to 6 in., 60 off ; medium to heavy, 2 to 6 in., 70 off ; 8 in., heavy, 40 off.

LEAD PIPE—Despite the strength of the lead market, there has been no change in lead pipe. Orders are coming along much more freely, and plumbers in anticipation of a good building season are getting in better stocks. We quote : Pipe and waste at 27½ off. Traps and bends at 50 ; calking lead at 5c per pound.

SOLDER—Solder is moving fairly well. Supplies in plumber's hands are apparently on the light side, and a stronger movement should set in before the building season commences. There is no change in prices, and we quote 19½c for half and half, and 18½c for wiping.

BRASS GOODS—With the firming of prices, trade has been stimulated somewhat, but the demand is not so good as it should be. Cutting continues in the cheaper grades.

RADIATORS AND BOILERS—Orders for future delivery are showing good strength, and it is evident that a strong movement will take place when the building season is fairly forward. Manufacturers are busy on supplies, and the general situation looks very favorable. We continue to quote radiators at 52½ off, and boilers at 50 and 10. Steam fittings are now about 70 off, instead of 66 2-3.

METALS—Copper is weaker again and looks in rather bad shape. Otherwise there is no change. We quote : Ingot copper, $14.50; ingot tin, $31.50; lead, $3.70 ; pig iron, Middlesboro No. 1, $18.50 to $19; Summerlee, $20. Heavy scrap red brass is 10½c ; light copper, 10½c ; heavy lead, 2½c.

TORONTO.

February 27.—The great bugbear, cutting, has at last reached the plumbing lines, and as a consequence trading is unsettled. Radiators have come down, manufacturers have withdrawn lists, and just now a discount of 60 per cent. may be obtained. Travelers for plumbing supply houses reported that some manufacturers were cutting on heating lines, especially radiators, and after some charges and counter charges, cutting became the order of the day.

Soil pipe, enamelware and oakum are meeting competition from United States houses, which, apparently, are slaughtering in Canada to obtain business not to be had at home. There is, therefore, somewhat of a demoralization to trade, and a number of buyers are holding off.

Some new brass prices may be given out shortly and also some new closet combination quotations, which are likely to be lower than present figures. Iron pipe and fittings are quoted at the old figures. It was anticipated that they would increase, but on the contrary the tendency is easier, due to the cut in iron, steel and pipe prices in the United States.

Lead pipe and solder are the staple lines, but no person will say how long these prices will last.

Inquiries for iron pipe, brass trimmings and plumbing supplies generally for new building are on the increase, but, no doubt, the uncertainty about prices will delay somewhat the placing of orders. The West has taken three carloads from Toronto within the past ten days, and as a result of the inquiry reported in Plumber and Steamfitter two weeks ago. These goods will be distributed from Medicine Hat.

A new and cheaper closet combination is promised before long by Canadian manufacturers. This line will sell at $13.50 and will enter into competition with goods at present coming in from the United States. Although April 1 is the date set for the appearance of this combination it may be on the market before that date.

BRASS GOODS—While the prices which have been holding good since the beginning of the year are still ruling, there may be a few changes within a short time as the lists are being revised and being made ready for distribution. No radical changes are noted, but it is understood the new quotations will be slightly easier.

IRON PIPE AND FITTINGS.—Cast iron pipe fittings are now quoted at 70 straight. Malleable are at 37½ and 40 per cent., the quotations not being at all equal. 1-inch black pipe is at $5.11, the old figures, and 1-inch galvanized is still $6.76. Malleable lipped unions remain at 60 per cent. Speculation is indulged in with reference to future prices owing to the cut in the United States and this has caused uncertainty in placing decent-sized orders.

SOIL PIPE—While the quotations are at the figures of the past month—light pipe 60 and fittings 70 p.c.—there is some little cutting going on. Some U. S. houses are trying to unload their lighter grades in the larger centres of Ontario and this has a tendency to ease off local prices, although the actual market quotations remain the same. Medium and extra heavy pipe fittings are still 70 p.c.

LEAD PIPE—Unchanged in condition and price is lead pipe. Calking lead is 4½ cents to 5c per pound ; traps and bends, 50; and pipe and waste 27½ off.

ENAMELWARE—Quite a lot of U. S. baths and lavatories have found their way into Hamilton, St. Thomas and the towns thereabouts. These goods are not A quality, but still are fair. They have been offered duty and freight paid, slightly below Canadian prices, but jobbers are not objecting, as they say so far this United States invasion has not hurt business, as in other plumbing lines, manufacturers across the line are reaching for business in Canada owing to depression at home, and evidently are prepared to slaughter to get the business.

SOLDER—Like lead pipe solder is steady and is one of the few lines not

affected by the cutting in plumbing goods. Half and half is 19c and wiping is 18 to 18½c, the unchanged quotations of a fortnight ago.

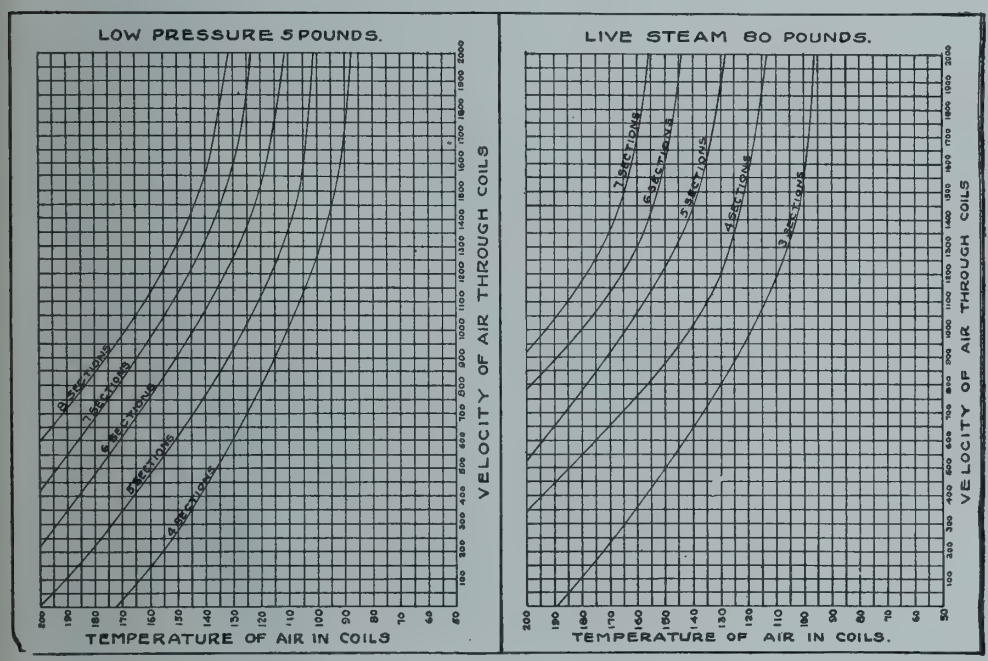
BOILERS AND RADIATORS — Decided cutting is going on in radiators So far boilers are not affected. Travelers coming in with reports to their houses caused one manufacturer to withdraw his list. Another maker went him one better by quoting a greater discount. The others have fallen into line and just now 60 p.c. is the prevailing discount.

OAKUM—This is another line on which cutting is being done, due to U. S. competition. Market quotations are still running from 4½c to 5c, but easier prices may be obtained. An Ottawa plumber was offered a half ton by a U. S. traveler at 2½c and he bought. Some was offered in Toronto at 3c. Of course these prices are for large quantities only, but it seems to show how anxious are U. S. houses to do business.

HEATING POWER OF STEAM COILS

The amount of heat transmitted per square foot of heating surface from steam coils naturally depends upon the difference in temperature between the steam on the inside and the air upon the outside. But the air temperature close to the pipes is largely influenced by the rate of flow across the surface. When the air remains practically stagnant the condensation will be but a fraction of a pound per hour per square foot, but as the velocity increases so also does the condensation—which is a direct measure of the heat which is transmitted—and the condensation will run up into pounds per hour for the same surface area. Manifestly the higher the velocity the more rapid will be the rate of transmission; hence the primary advantage of the blower system of heating under which the air is compelled to pass rapidly across the surface of exposed steam pipes. The result is far greater efficiency per square foot than is obtainable with indirect steam heating.

The ultimate temperature given to the air passing across the stack of steam coils must depend not only on the steam pressure, but on the initial temperature of the air, and, above all, on the arrangement of the pipes. The less the depth of the heater or the distance across which the air passes the greater will be the condensation, but the less will the temperature of the air be increased. Intensity of temperature with a given steam pressure can only be obtained by depth of heater.


LOW PRESSURE 5 POUNDS.
VELOCITY OF AIR THROUGH COILS
TEMPERATURE OF AIR IN COILS
LIVE STEAM 80 POUNDS.
VELOCITY OF AIR THROUGH COILS
TEMPERATURE OF AIR IN COILS.

These relations are not generally known with exactness, except by those directly interested in the manufacture and installation of such apparatus. Special interest, therefore, attaches to the accompanying curves from their private catalogue which are presented through the courtesy of the Massachusetts Fan Company, Watertown, Mass. Without going into details of construction or conditions these suffice to show that minimum velocity and maximum depth of heater are essential to intensity of temperature. Between these extremes lies average practice with heater depths ranging from 4 to 6 sections (16 to 24 pipes) and velocity from 1,200 to 1,800 feet per minute.

The Alberta Provincial Government are erecting a new office and stores building at Calgary.

WHY THEY CRIED.

An Irishman noticed his companion shedding tears at the dinner table and asked him what he was crying about. He had just partaken of some red peppers, but he replied: "I'm crying because me mother is dead." Soon No. 1 tasted of the fiery fruit. "And what are you crying for," he was asked. "I'm crying because you didn't die when yer mother did," he answered.

The Imperial Realty Co. will this summer erect at Ottawa one of the largest apartment houses in Canada. The structure will be eight storeys high. It will be similar to the Linton Apartments, in Montreal.

Chief Buchanan, Winnipeg, is recommending the construction of a new fire station at Weston, to replace the temporary structure there, and advises that plans of the other suburban stations already erected be used for the purpose.

Condensed or "Want" Ads.

DUPLICATING DEVICES.

IF INTERESTED in a Duplicating Machine for getting out circular letters, reports, price-lists, etc., or for printing various office forms, write for booklet and samples of work. The "POLYGRAPH" is the newest, latest and best, and sells for a lower price than the others. Is unexcelled by any similar device on the market. F. W. Tenney, Canadian Sales Agent, 123 Bay St., Room 116 Stair Building, Toronto, Canada. (tf)

MISCELLANEOUS.

ADDING TYPEWRITERS write, add or subtract in one operation. Elliott Fisher, Limited, 129 Bay Street, Toronto.

HIGH CLASS COLOR WORK.—Commercial stationery, posters. The Hough Lithographing Co. Limited. Office, No. 3 Jarvis Street, Toronto Telephone, Main 1576. Art, good workmanship business methods.

IT PAYS FOR ITSELF.—The money you are now losing because you haven't a National Cash Register would pay for one in a short time. The National Cash Register Co., F. E. Mutton, Canadian Manager, cor. Yonge St. and Wilton Ave., Toronto.

NOTICE—Users of Pitner Gasoline Lamps are warned against being induced to purchase parts of other makes of lamps to be used on the Pitner. The most vital part of any lamp is its generator, and the Pitner generator has been granted a patent in Canada, the United States and other countries, on the principle of its improved method of generating gasoline vapour. Supplies and parts for the Pitner lamps can be received by return mail by applying to our representatives or direct to the PITNER LIGHTING CO., Limited, 36-38 Lombard St., Toronto, Ont. [tf]

REPRESENTATIVE WANTED.

WANTED in every town and village, a representative to take charge of the circulation of our various publications:—Hardware and Metal, Canadian Grocer, Financial Post, Plumber and Steamfitter, Dry Goods Review, Printer and Publisher, Bookseller and Stationer, Canadian Machinery, and Busy Man's Magazine. Good financial standing and business connection a strong recommendation. Just the position for a retired business man for his spare time. The MacLean Publishing Company, Limited, Toronto.

SALESMAN WANTED.

SALESMAN WANTED for western Canada. Must have knowledge of plumbing supplies; able to figure hot water and steam heating. State age, experience and references to Box 792, PLUMBER AND STEAMFITTER, Toronto.

"IDEAL"

"IDEAL" FINE PLUMBING LINES
"IDEAL" GAS STOVES and RANGES

SOMETHING NEW

Look for the Trade Mark

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DETROIT MICH.
WINDSOR, CANADA.

The Stamp of Merit

The "Ideal" Trade Mark is prominently displayed on all genuine "Ideal" Materials, and all goods so marked are the best that can be produced. The "Ideal" Trade Mark is recognized as a mark of excellence. : : :

The "Ideal" New Low Tank Seat Action Combination No. 28 K

(Patent Applied For)

Combined Push Button and Seat Action

Absolutely perfect in operation

The "Ideal" Independent Gas Water Heaters

Most Efficient Heater on the Market

Made in two sizes, Nos. 11 and 13

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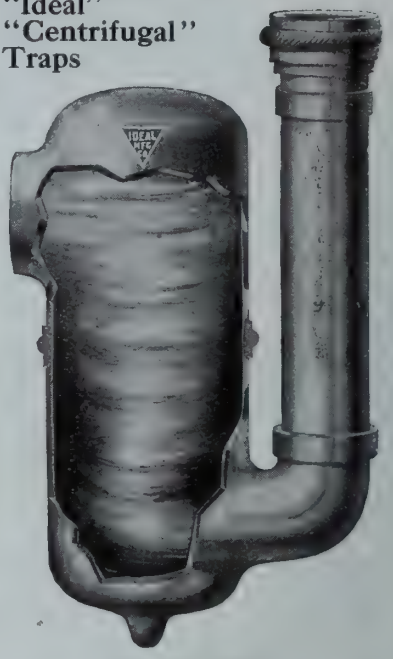
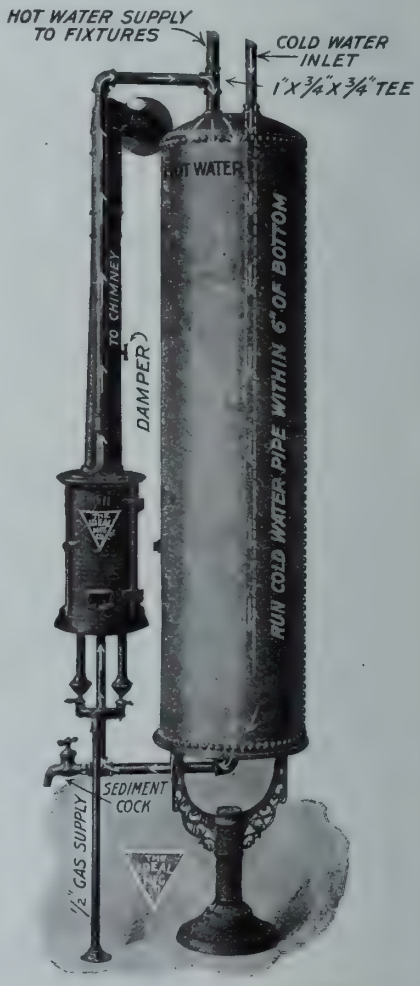
The Renowned "Ideal" "Centrifugal" Traps



See that Swirl?

Ask us to demonstrate "Ideal" Centrifugal Traps



"Ideal" Elevated No. 218

We are the originators of the

Elevated Side Oven Gas Range

Detroit Michigan

The Ideal Manufacturing Company

Windsor Canada

Robertson's Marble Urinal Stalls

FITTED WITH STEVENS' VENTILATING URINALS

Plate E 298

We have our own marble yards in connection with our plumbing business and can make all styles of Marble or Slate Urinals promptly to order.

The James Robertson Co., Limited

Montreal Toronto Winnipeg St. John, N.B.

Backed by a Guarantee

All our **Bronze** Powders and **Liquids** have the distinction of being **Guaranteed.** All plumbers and Steamfitters know the necessity of having the **Best** in Bronze Powders and Liquids.

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The Canadian Bronze Powder Works, Montreal & Toronto

No order too large **Works at Valleyfield** If your nearest dealer does not handle our goods, write us.

EVERY PLUMBER AND STEAMFITTER

in Canada has some want which could be satisfied by a small condensed advertisement in our paper.

We reach twice each month almost every plumber and steamfitter from one end of Canada to the other. It seems reasonable to suppose that some one of our readers will want to buy just what you have to sell, or will want to sell just what you have to buy.

The rate is low. 2c. per word for the first insertion, 1c. per word for subsequent insertions. Send cash with advertisement to our nearest office.

PLUMBER AND STEAMFITTER

MONTREAL TORONTO WINNIPEG

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GENUINE

Armstrong Stocks and Dies

ARE THE BEST.

Catalogue on request.

The Armstrong Mfg. Co.
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Sizes ¾" to 2".

We make these

RADIATOR VALVES

with standard brass disc, and with the Jenkins Disc, with and without Unions.

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BY R. M. STARBUCK

This comprehensive work on the modern and most approved Methods of Plumbing Construction illustrates and describes the Drainage and Ventilation of Dwellings, Apartments and Public Buildings. It is the STANDARD BOOK for Plumbers, Architects, Builders and Property Owners. There is a chapter devoted to each of 55 different subjects, accompanying which is a full page illustration. Valuable suggestions for Estimating Plumbing Construction are given.

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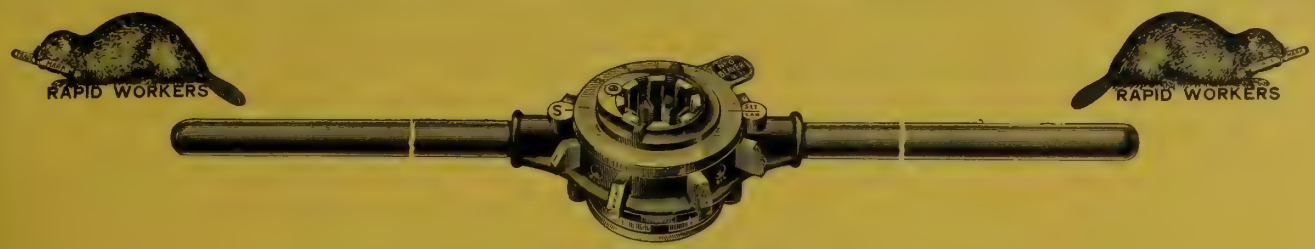

No. 6 "Beaver" Die Stock

Let us send you a "Beaver" Die Stock on

TEN DAYS' FREE TRIAL

and if it is not every bit as superior to ordinary Die Stocks as we claim it is, we will take it back without charging you a cent.

¶ Just figure out what a lot of time you can save with a "Beaver" when you have any pipe-threading to do.

¶ Instead of hunting out a different set of dies for each size of pipe, you can adjust your "Beaver" to any of the four sizes within its range in a "jiffy."

¶ The threads cut by a Beaver are always absolutely accurate and properly tapered.

¶ No danger of stripping threads when you are using a "Beaver" because the cutting dies are always in perfect alignment.

Number 6 "Beaver" cuts ¼-in., ⅜-in., ½-in. and ⅝-in. pipe, using two sets of dies. Both sets are operated by a single cam, so constructed as to move one set of dies out of the way while the other set is in use.

Number 2 "Beaver" cuts 1-in., 1¼-in., 1½-in., 2-in. pipe. One boy can successfully operate this tool.

Number 4 "Beaver" cuts 2½-in., 3-in., 3½-in., 4-in. pipe and a boy can operate it with a ratchet handle.

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The Heating Problem Easily Solved

No trouble at all, no disappointments, set backs, hitches and other difficulties or snags when you recommend your customers to place their faith in and stand

By Sovereign Boilers

It is efficient in construction, economical of fuel, giving the maximum of heat with the minimum of expense; the material used is the very highest in quality, while the workmanship is undoubtedly the best. Our booklet "Simplified Heating" will tell you more about the Sovereign. Send for it.

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Head Office and Works: GUELPH, ONT.

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Plate F
199

The Standard Ideal Company Ltd.

Dimensions Lavatory 18 x 21" Oval Bowl 11" x 14" Back 8"

We have a large number of other styles including many new designs to select from--For which see our catalogue F now ready for distribution.

We are also manufacturers of full lines of Bath Tubs, Shower Baths, Lavatories, Sinks, Laundry Trays, Wash Sinks, Range Closets, and Urinals, etc., etc.

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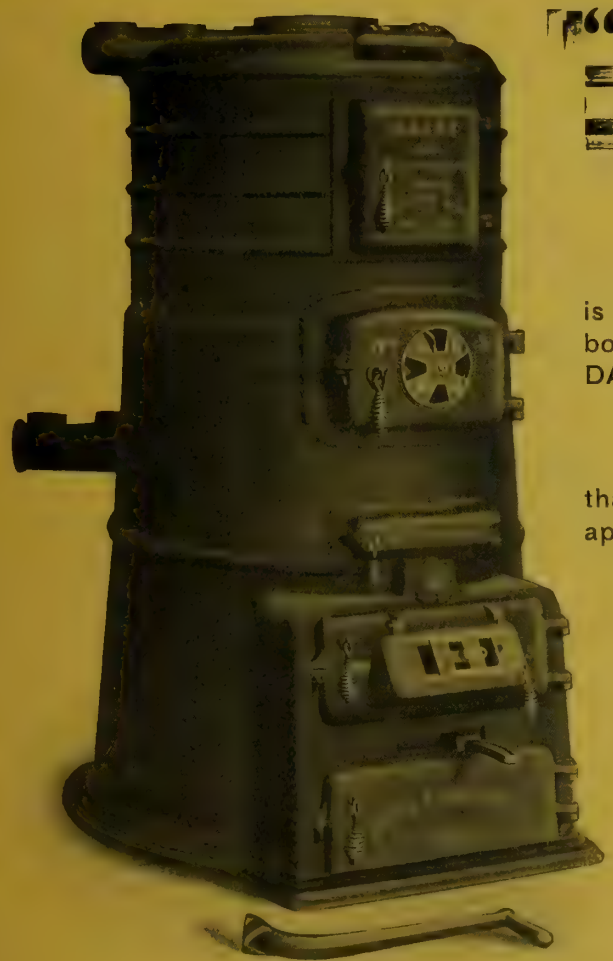

"IT'S JUST AS GOOD"

AS THE

DAISY

is the talk some people use when they try to sell their boilers, yet, unconsciously they pay a tribute to the DAISY'S WORTH and PRESTIGE.

There is but One Genuine

that is just as good, and it is the incomparable, unapproachable pioneer of HOT WATER Boilers, 30,000 of which are in active service—its name, need we tell you, is

The DAISY

Built on honor—of the best materials money can buy, by superior workmen, under the direction of competent engineers, and at the best plant ever devoted to the production of a Hot Water Boiler.

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Beaver Brand

Cast Iron Enamel Ware

Noted for Good Color, Durability and Attractiveness

The Cut Illustrates Our

2 1-2 Inch Roll Rim Bath—

One of our leading sellers. Our splendidly equipped, new plant is producing an unbeatable range of enameled Bath Tubs, Slop Sinks, Kitchen Sinks, Laundry Tubs, Lavatories, Closets, etc., and our customers can be sure of satisfactory goods promptly shipped. A guarantee goes with all Beaver Brand Enameled Ware.

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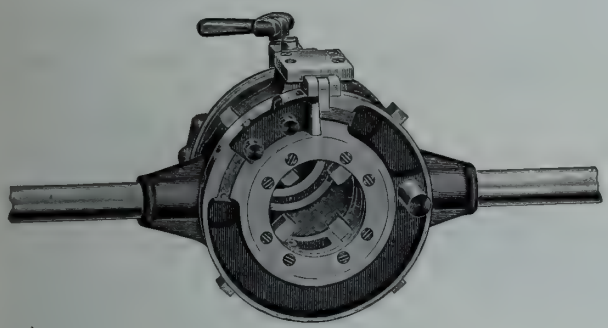
All Jobbing Houses	All Jobbing Houses	A. O. Campbell	Crane & Co.

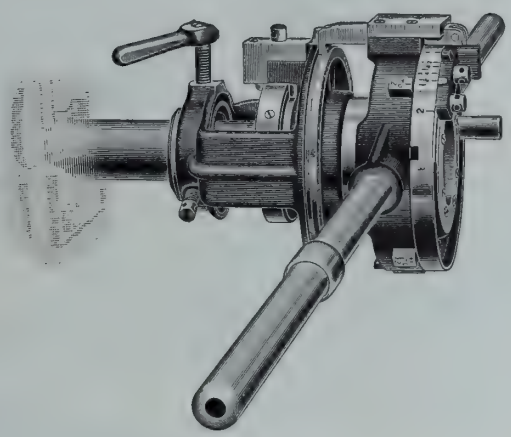
If you are looking for IMPROVED TOOLS

The "BUCKEYE" Die Stock for threading your pipe is one that you will be interested in.

There is no easier cutting tool. It is the **ONLY** "easy-cutter" that does **NOT** have to be turned back. It is the only one **WITHOUT A LEADER SCREW** and its troubles. The dies lead on and release **AUTOMATICALLY.**



1 to 2 Inch Size—Front View.



Side View—Ready for Work.

The Hart Manufacturing Co.,

1375 East Third Street, - - - - - Cleveland, O., U S.A.

DISCARDED FEATURES

threaten you. See the chain? It will of its own weight fall from its locking pockets when working overhead. It threatens you with grave dangers when working in elevated positions. Discarded by us years ago, it is now being advertised as permitting a shift from one to other side of pipe without removing chain. It will permit the shift but it brings dire dangers with it because it is not safe in all positions. We are pioneers in, and all our lives have studied, chain pipe tools. The "Agrippa" Single Jaw is without mechanical or construction fault—the only absolutely safe tool of equal capacity for crooked fittings or pipe. There's no other. Guaranteed and on trial from your dealer.

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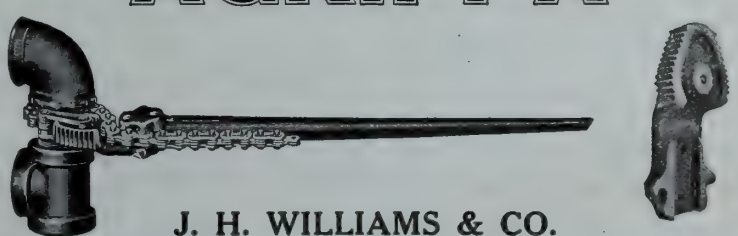


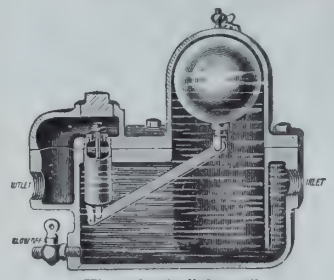
J. H. WILLIAMS & CO.

Pioneers in Chain Pipe Tools

BROOKLYN, NEW YORK

OUR "WANT ADS." get clerks for employers and find employers for clerks.

THE WRIGHT HIGH AND LOW PRESSURE STEAM-TRAPS



The Wright "Victor"

Some Superior Points

The large valve insures great capacity.

The Wright "Victor" is a low pressure continual flow steam trap.

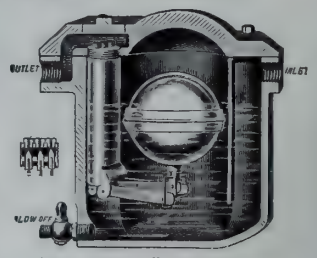
Discharges continually and without steam waste the accumulating condensation from steam pipes and connections regardless of small flow or flood.

Distinctive Features

A continual flow high pressure trap.

The Wright "Emergency" is equipped with three valves.

This trap insures the greatest possible capacity for discharge regardless of small flow or flood. Write for fuller information and pamphlets about Wright Traps.



The Wright "Emergency"

Pamphlet W on application.

DARLING BROTHERS, Limited, 15 Ottawa Street, Montreal

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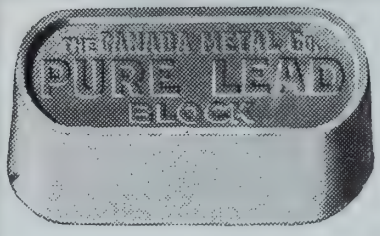
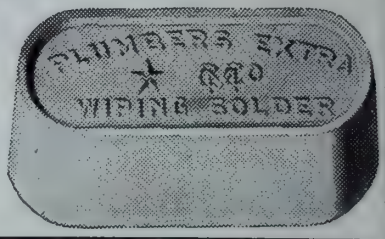


THE THREE SPECIALS



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The Canada Metal Company, Ltd.
Toronto

G. B. W. Valves--the kind that last

(Our goods are imitated but not equalled)

Don't trail behind. Send us an order.

They are labor savers and profit producers

A Trial will convince you

The choice of all intelligent buyers.

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Manufacturers of PLUMBERS' & STEAMFITTERS' BRASS GOODS

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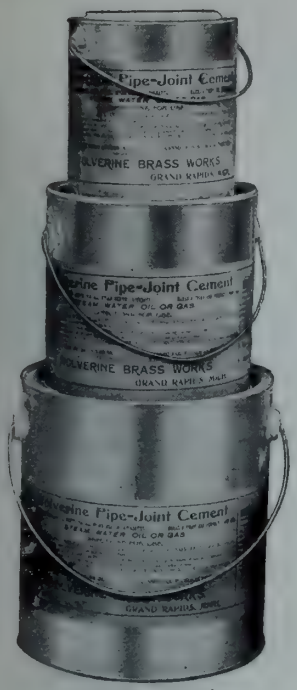


Wolverine Pipe Joint Cement

For Steam, Gas, Water, Oil, etc. Makes Tight Joints

Has three times the bulk of red lead, so that, although apparently higher in price, is really cheaper.

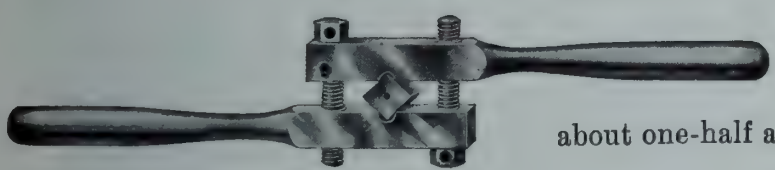
Superior to red lead in every way. Makes quicker and more satisfactory work. Has greater adhesiveness with greater ease in taking apart connections.

This cement adheres to either rough or polished surfaces of metal, porcelain or glass. Joints easily separated when necessary.

It is a dry powder. To be mixed with **Boiled Linseed Oil,** when needed for use. In hot joints, set hard in 20 minutes. Is used same as red lead, either as putty for flange joints or paste for screw joints. Sets hard even under water. Pressure can be put on as soon as joints are made.

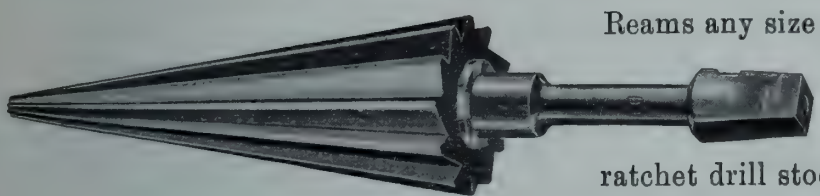
Put up in 5, 10 and 20 lb. pails. No charge for packages. "A little goes far." Guaranteed Absolutely Satisfactory. Send in your order. Price will be right.

Wolverine Universal Tap Wrench



This wrench firmly holds any tap from ¼ in. to 3 in. It is made from High-Grade Polished Steel. Strong and durable. Costs about one-half as much as other tools of same capacity.

Wolverine Extra Heavy Shank Taper Reamer



Reams any size pipe from ¼ in. to 2 in. Does the work of a set of three regular tapered reamers. Made of best tool steel carefully tempered. Shank is correct size for any ratchet drill stock.

Wolverine Taper Reamer Handle

A good reamer should have a good handle. This durable japanned iron handle is 14 inches long and just fits the reamer shown above. Sold at a very reasonable price.

Send for Catalogue "F"

CANADIAN WOLVERINE CO., Limited

Manufacturers of Plumbers' Specialties

Chatham, Ontario

Plumber and Steamfitter

and Sanitary Engineer of Canada

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

MONTREAL, TORONTO AND WINNIPEG, MARCH 15, 1909

DETROIT GETS NEXT CONVENTION.

The National Master Plumbers Association of the United States has decided to hold its next annual convention at Detroit, the dates of June 22, 23 and 24, being named although it is suggested that these be changed to July 13, 14 and 15. Detroit had the convention once before, in 1894.

The Canadian National Association was to have made an announcement some time ago as to where its next convention would be held. Toronto and Halifax were suggested but Toronto seems to be out of the running as regular meetings of the Toronto Master Plumbers Association have been discontinued owing to the apathy of the members, the officers feeling that the executive can best continue the work until the trade is ready to support them in making the meetings a success. With matters in this shape Provincial Vice-President Cooper declines to take the responsibility of calling a provincial convention.

If Halifax renews its invitation for the convention the executive of the National Association are likely to accept it as Nova Scotia has been doing the best organization work of any province during the past year.

The Plumber and Steamfitter, however, makes the suggestion that this year's convention be held at Windsor on the Monday and Tuesday of the week the U.S. National Convention is held at Detroit. The two national associations could fraternize together, ex-President Craig, of the U. S. Association, an old Canadian, might be asked to deliver an address before the Canadian Association, and the occasion might be also taken advantage of to endeavor to bring into existence an Ontario Association.

WILL ENAMELWARE MANUFACTURERS UNITE.

Two representatives of the Standard Ideal Manufacturing Company and two of the Amherst Foundry Company met at Montreal last week and discussed ways and means of combining the two plants under one controlling company in order to be better able to reduce expenses and meet the competition of enamelware manufacturers from across the line as well as doing away with destructive home competition.

It is considered unlikely, however, that the two companies will unite into one company for the present at least, although arrangements will probably be made to sell all Canadian enamelware on a uniform list. An advance in prices is also considered certain and, in fact, a re-adjustment has already taken place in one small line in which there has been considerable cutting.

The importation of American goods will, it is felt, prevent any marked advance, as Canadian lists must be kept below the price American goods can be imported for.

MONEY IN THIS BUSINESS.

The accounts for 1908 for Thos. Robertson & Co., plumbing supplies and metal merchants, Montreal, a Canadian concern with its stock quoted on the Glasgow Stock Exchange, to be presented at the annual meeting show that the net revenue for the year in round figures was $79,200, being a decrease of $99,915 as compared with 1907, and, including $176,230 brought down, there was an available balance of $255,430. A dividend of 10 per cent. is recommended on the ordinary shares, payable quarterly and it is proposed to transfer $50,000 to the reserve fund, making it $300,000, and leaving $41,430 to be carried forward.

It is refreshing to hear of some concerns in the plumbing business that are making money these days and many readers of Plumber and Steamfitter will, no doubt, congratulate the Thomas Robertson Company, on the excellent state of their business.

BRASS MANUFACTURERS GETTING TOGETHER.

As announced in the last issue of the Plumber and Steamfitter the proposal has again been made that the various Canadian brass plants unite into one large concern with a central selling agency. The plan also includes the proposal that the plant best suited for producing valves be turned into that one line, while another factory would make compression work, still another fuller work, etc.

The proposition has many strong talking points, including that of economy in management as well as manufacturing and selling, but as several of the brass manufacturing concerns are joint stock companies it will take some time to arrange the details, providing the principals decide in favor of the general idea.

The demoralization in prices of brass goods and the placing of some cheap lines on the market will undoubtedly compel a revision of present lists before long but it is more than likely that this will be the extent of the "getting together."

NEW SANITARY DRINKING FOUNTAIN.

Health authorities throughout the country are heralding with a great deal of enthusiasm the advent of a new sanitary drinking fountain, and are looking forward to the time when this new health dispensing machine will be installed in all of our public schools, waiting rooms, factories, theatres, etc.

A public spirited man in Boston has invented a very unique, simple, and practical piece of mechanism in the shape of a sanitary drinking fountain. It is the only apparatus that delivers water and containers from separate receptacles by one and the same process, and the interest which this invention is arousing is helping considerably in the national crusade against the spread of contagious disease through the medium of the public drinking cup.

This fountain delivers for the sum of one penny, a new clean paper cup filled with pure water. The cup is made of water-proofed paper or fiber, and can not be returned to the machine, thus insuring to every purchaser an absolutely clean cup.

The method of operating this sanitary water vendor is very simple. The cup and water are delivered at one operation. The purchaser deposits one penny in the slot provided therefor, throws the lever to the right as far as it will go and continues holding it until the paper cup drops into view and is automatically filled with water.

The fountain has a very neat, clean and sanitary appearance, being made for the most part of white enamel. The paper cups are stored upside down in the long nickel-plated tube just above the vendor, thus keeping them free from all dust, and therefore germless. The ice used in cooling the water does not come in contact with it at any time, thus preventing any chance of infection from such a source.

A water vendor of this design has recently been installed in the office of the Commissioner of Health of New York City, and the International Tuberculosis Society have determined to use it as one of their chief weapons in their battle against the extermination of the Great White Plague.

REPORT ON SCHOOL PLUMBING.

Comparison of school plumbing installation was the subject of a report recently made to the District Commissioners by Chief Inspector of Plumbing Davis, of Washington, D.C., upon the return of that official from an inspection trip in the cities of Omaha, Nebraska and Chicago, Illinois. Mr. Davis had some time previously inspected the plumbing in the schools of the cities of Pittsburg, Pennsylvania, and Cleveland, Ohio, and incorporated some data on the same in this report.

Conditions in Washington, the report states are far superior to those in the cities mentioned. Drinking fountains on every floor he considers much better than the plan of having them located in the basements of the schools. Sanitary conditions are facilitated and disease minimized.

The use of tile or asphalt floors is recommended for halls and basements, instead of concrete. With tile or asphalt, it is thought, grooves usually found in concrete will be eliminated, and the accumulation of dirt reduced. Vitrified brown brick wainscoting, six feet high, in corridors and stair halls, in place of plaster or wood, is considered a distinct advance in construction.

Mr. Davis states that the placing of all schools above ground entirely, assures a dry basement, and the cellars are then used as engine rooms.

The report summarized places the fixtures in use in the Washington schools as being far superior to those seen on these two inspection trips, and must be considered better by a great many cities because of the numerous inquiries which he has received for information regarding them.

PLUMBERS SHOULD TAKE THE LEAD.

There is no doubt that plumbers generally can do much towards driving home to the various authorities concerned the absolute necessity for the general adoption of public conveniences in Canada. It may be said by the uncharitable that the plumber, in taking any step in the matter, has an axe to grind, but such comments can be lightly dismissed with a shrug of the shoulders. The plumber is a much abused man at all times, but he is broad minded, and public spirited enough to say. "We must have these conveniences. The moral and physical health of the country demands it. We know that at a small expense, comparatively speaking, conveniences can be constructed, and, as a practical and experienced body of men interested in the health of the country, we call upon the local corporations concerned to take the matter up."

The man-in-the-street is a long suffering individual, and is slow to move. He wants a directing force. In the present case the plumber is the man for the work and we have no doubt that he will cheerfully take up the burden. We shall be very much surprised if the National Association does not interest itself in the matter, and institute a strong campaign. Collectively and individually, by bringing the matter forward on every conceivable public occasion, and by preaching the crusade to the vast number of people met with in the course of the work, plumbers can do grand missionary work. Once the public are thoroughly aroused the removal of this blot upon our civilization will not be long delayed.

Temperance advocates should be strong upholders of the plumbers on this vital question. There is no need to point out to them the danger of compelling a young man and may be young woman, to enter a saloon in the case of necessity. Doctors likewise should be equally prominent in support, for they know full well the physical injury likely to be incurred by lack of public conveniences. Then again the use, necessarily made, of lanes in busy centres, not only at night but during the day, is not only objectionable from a sanitary point of view but from a moral point of view as well, as children are constantly playing round.

In fact, take the question from any side and there is no doubt as to the seriousness of the situation. Something must be done, and the plumber is the best man to take the lead and show the public that he is a citizen first, and a business man afterwards.

WASHINGTON'S PUBLIC CONVENIENCE STATIONS

Although many cities have experienced difficulty with their underground public convenience stations, the City of Washington, District of Columbia, has one to which practically the whole country is looking, judging from the many inquiries which are made concerning its construction, the cost, and the manner of its operation. The success of the present one is also attested by the fact that three more stations, two underground and one above ground, are to be constructed there during the next year at an estimated cost of $57,500, being located in the three most congested parts of the city, at present not provided with these conveniences.

Defects of Underground Lavatories

A Writer in the Metal Worker Refers to the Work of the Civic League at St. Louis—Mechanical Ventilation Required if Air is to be Kept Pure in Summer and Winter—Stations at Toronto and St. John.

The disposition is developing rapidly in progressive American cities to provide public comfort stations, and the article by Mr. McGonegal in The Metal Worker (reproduced in the Plumber and Steamfitter of Feb. 15), is very timely, writes "Exposure." It shows that something more is necessary than the arrangement, architectural design and the plumbing equipment in the construction of such stations. It will enable those who are groping in the darkness of this new field to avoid much pioneering work to gather experiences in this line.

The need of such stations in St. Louis caused the matter to be referred to the Street Improvement Committee of the Civic League and its printed report of 29 pages, with illustrations, contains suggestions which will be valuable for carrying out with due consideration what Mr. McGonegal has shown to be essential. Already a great deal of time has been expended in visiting stations in operation in different cities with a view to noting how well they meet the requirements, and there has been some interchange of opinion on the part of those who have made such visits.

Shortcomings of Existing Stations.

A visitor to the new station at Cincinnati, Ohio, during the summer season found it positively unbearable on days when the humidity is high, and is of the opinion that the heating plant is capable of keeping up with the scheme for ventilation in cold weather, but at the time of his visit this had not been under test. One of the biggest stations in the country is in Times Square, New York City, and the heating plant has been found to be utterly inadequate and little or no provision is made for ventilation. Shortly after it was opened it was closed for repairs. It has also been found that to heat it with gas is extravagant. Some of the underground stations in Brooklyn have small hot water heating plants that are not of sufficient heating capacity to prevent freezing if the fresh air fans are turned on full for ventilation on a cold day. The opinion has been expressed that the station in City Hall Park, New York, is disgraceful so far as the conditions found in it are concerned.

An exhaustive investigation of such stations by a public engineer in which a number of such stations were visited and sufficient time spent in each to devote attention to each detail and to question the employes in charge without the knowledge of their superior officers has confirmed my opinion that there is much yet to be desired in the structures that have heretofore been erected. Conference with other engineers, who have been equally searching in their investigations, shows that in the stations already erected the same mistakes are made over and over again instead of there being the limination in each new construction of some of the bad points of its predecessor.

Faults in Design.

This is largely due to the fact that as each town builds its station the work of designing is assigned to some one who is not familiar with the defects that have attended those stations already in use. In consequence the designer plans what appears to be the most logical thing in the light of his experience in other architectural designs. Sometimes it has been discovered that the man delegated to make such plans has never seen a public comfort station and rarely knows anything about one excepting that they may be found at certain spots. The things that should be considered in connection with public comfort station construction are not logical from the viewpoint of the building architect. Those who are called upon to plan such buildings should have a textbook that can be relied upon, at least to mention the tangible points, or that will arouse him to the necessity of finding out the things he ought to know before attempting to plan a station. It is not sufficient that a station be built, but more important that it will stay built and continue capable of being kept in a cleanly, sanitary condition throughout a period of many years with a minimum expenditure of labor and material. An unclean, damp, ill-smelling station is an abomination.

Frank Criticism Desired.

Numerous articles have been published about the various stations soon after their completion, and in the most part commending the purposes which led to their construction. Naturally little has been stated about their defects, and no article has been written heretofore which deals with the subject as a whole taking up the various points to be considered and discussing them without reference to any particular station. The article which has induced me to make these comments should lead some one to go deeper into the subject and cover it comprehensively. To allude again to the report of the St. Louis committee, it contains a paragraph from the 1905 edition of Baedeker's Guide, as follows: "Public conveniences are not usually provided in American cities. Such as do exist in New York and other large cities are disgraceful and inadequate in number, size and equipment." And I have no hesitation in the light of my study of them to say also deficient in sanitation generally. It is also pointed out that Cincinnati has constructed an unusually attractive underground station in Fountain Square, to which I would add that its attractions are almost lost to view when it is wet, misty, cold or otherwise uncomfortable outside, yet if it had been properly constructed it should be just as sweet when it was damp and nasty outside as at any other time. This station is alluded to by a man who had no intention of leading anybody astray, and who would not have done it if he had been thoroughly informed of the facts in the case, as he should have been before speaking so positively in favor of it.

Insulate Against Heat Transmission

On another page is an extract from a letter by Henry B. Davis, chief inspector of plumbing, Washington, D.C., who is probably the very best informed man in this country on convenience stations. A paragraph contains the following: "In underground stations avoid ceiling lights, areas, windows, etc. Insulate the entire station and use artificial stone and avoid the dampness caused by condensation. A damp station cannot be kept clean. A station without ventilation is an abomination. Arrangements for mechanically heating and ventilation should provide for changing the air in toilet rooms completely at least 20 times per hour."

The report also states that stations can be well ventilated by the use of ventilating shafts and fans if properly cared for and kept in a good, clean and sanitary condition. Practically all of the London stations are underground and no difficulty has been encountered in the matter of sanitation. This I say: It is because they are both properly

designed and constructed. Some of the buildings shown in the report have no provisions for ventilation other than a sheet metal ventilator on the roof.

A two-page illustration is given to a design which was awarded the first place in an architectural club competition, and until the design is passed upon by some one who has made a thorough study of the essentials in underground convenience station construction, little attention should be given to it, as it is more than probable that the design is the work of some of the draftsmen or students in some architect's office who have had little or no experience in construction of any kind and comparatively little in architectural design. It is bad enough when such work is intrusted to highly trained men who are deficient in actual experience in this special work. The two-page prize design mentioned seems to provide for ventilating some of the fixtures on expensive marble work. The plans give no evidence that artificial mechanical ventilation is to be provided. The urinal arrangement would be far better if a battery type was employed. While the general layout is good, the separation into two buildings of the conveniences for men and women gives unnecessary conspicuousness to all who enter.

The booklet compiled by the Civic League was the result of a large number of inquiries mailed to different cities and gives the answers received from the heads of large departments not at all familiar with the actual working out of the problems of construction and maintenance and who would be unlikely to spread information of their shortcomings in actual service even if they know them. In some instances the heads of departments must have known that the stations often are pervaded with offensive odors and that they are damp and the walls are wet at times, and not knowing that it is possible for such conditions to be avoided they accept them as proper with observation that a public closet will smell at times. It is impossible for men who have not had actual working experience in making up the design, supervising the construction and testing the conditions to write upon such subjects so that the information can be followed without further information on the part of those who desire to use it. It is no part of my purpose in commending Mr. McGonegal's article to indulge in any narrowminded criticism of the work of other men and I hope that the comments made will be understood as pointing out to those who might be called upon to work upon the construction of such buildings things that are entitled to important consideration.

Toronto's First Public Lavatory

Established Nearly Ten Years ago and Remodelled last Year—Now used by Nearly Two Thousand Men Daily—More Stations Required in Toronto.

The public comfort station which stands in front of the post office building at the head of Toronto street, Toronto, is the oldest convenience station in that city, though dating from its reconstruction in 1907 it ranks third. When in 1899 and 1900 the suggestion was broached that Toronto was too big a city to be without a public comfort station, much discussion pro and con ensued. After some warm debates in the city council and in the press it was decided to construct an underground station in the centre of the city, and the location decided upon was set at the junction of Toronto and Adelaide streets. That the movement was a beneficial one is proved by the success which has attended the opening of two other convenience stations in different parts of Toronto, and the probability of at least three more being contructed this year. The city engineer's estimates call for six, but it is not likely that more than three will be constructed. One suggestion made was that the three new ones about to be decided upon should be located in Queen's Park, Allan Gardens and Alexandria Park, but opposition has developed of late, and while it is probable that conveniences of some kind may be built in those parks, it is likely that the new stations will be underground structures placed near busy street corners. One is absolutely necessary, for instance, on the City Hall square, while other places where the need exists is at such points as Queen and Roncesvalles, College and Spadina, Queen and Kingston road and in Bayside park at the foot of Yonge Street, and all of these should be double stations for both men and women. Conveniences are required in all the parks, but the need there is only for certain hours and on certain days, whereas the need exists about 18 hours each day and 365 days in the year at the business corners suggested.

Toronto's First Public Lavatory. One Thousand People visit this Place Every Day.

The old station at Adelaide and Toronto Streets was a canopy shaped corrugated iron structure with a spiral

staircase to the underground conveniences. It was crude, and in time became an eyesore; the lavatory itself required thorough renovation, and the ventilation was very poor. It was, however, the forerunner of better things.

In 1905 the city council gave orders for the construction of two new stations. One of these was built above ground at Yonge and Cottingham Streets, and opened in February, 1906; and the second, an underground station at Spadina Avenue and Queen Street (described in Plumber and Steamfitter of February 15), was opened on April 8th of the same year. The reconstruction of the Post Office station having been decided upon, the lavatory was closed for a time early in 1907.

Immediately on its re-opening the station gained in favor. The first day 433 persons used the conveniences, and this number increased to over 700 daily inside a week, and 900 daily by the following month. At present the average number of people using the station is 1,700. The largest daily number was 2,000 on Friday, March 12, and the largest Sunday attendance was 1,200 on March 7. Counting from the day of opening until the end of December, 1907, a period of 36 weeks, the total number of users was 140,903, an average of 652 daily and 3,914 weekly. Since July 6 last until March 13, the station was used by 180,000 persons.

The station was reconstructed according to the plans of John Williams, assistant city engineer, and the general contract was taken by Harry Jennings, who sub-let part of the work. R. W. Snyder installed the plumbing and the Canadian Ornamental Iron Co. supplied the iron railing around the structure.

The station itself is the smallest and busiest in the city and is open continuously. In size it is about 20 feet by 14 feet and is sumilar in construction to the station at Spadina Avenue and Queen. It has this advantage, however, that it is protected at the top by a cement base, a foot high, around the outside, which prevents the surface water running down the stairs and trickling into the interior of the station.

The lavatory is reached by an easy flight of cement steps, a brass handrail being placed along each side of the stairs, and the wall, entrance and interior of the station being built with white-faced enamel Scotch bricks. The ceiling is of arched construction, the tile bricks resting on steel beams. The floor is laid with marble blocks. The interior of the station has on one side a bank of four urinals and on the other a set of three closets. These urinals and closets are those which were used in the old station, being cleaned and then replaced. The urinals are English porcelain and were made by Twyford, Hanley, Eng. The closets are enamelled and were made by the J. L. Mott Iron Works, New York. They are not the modern syphon jet closet now used in public lavatories, but the old high tank outfits. Marble partitions made by the J. G. Gibson Marble and Granite Co., separate the closet compartments and face the front. The James Robertson Co. supplied the pipe and nickel trimmings. There is a one-hole wash-basin at one end of the station and the caretaker's cabinet occupies the other. Running water keeps the urinals clean and fresh.

A three-lamp electric fixture lights the interior, and a hot water system heats it. This heat is supplied by a gas heater which consumes 500 feet of gas a day. There are six wall registers in two groups of four and two registers each.

There are five wall vents connected to a vent shaft rising at the foot of the stairway. This vent shaft, which is ornamental, serves as a street light at night, and a circular set of Luxfer Prism glass lights let in at the bottom of the shaft allows the daylight to brighten up the entrance to the station in the daytime. The reconstruction cost about $3,500.

The post office station should be double the size it is, as at present it is not nearly large enough to meet the demands. The enlargement could take the form of another wing running east from the stairway. If this is not done another station will soon be necessary in the vicinity. The heating might be improved by lowering the system. At present in all the stations the cold air comes in along the floor at every opening of the door and drives the heat out through the vents before it has a chance to do any good. The ventilation might be bettered, too, by putting a local vent over the closet bowl, and so immediately drawing off the odor. As it is at present the compartment frequently becomes filled with foul air before it reaches the vents, and not all this foul air passes through these vents. The vent pipe might be better able to do good work were the air in the pipe heated, thus creating a draft. The closets, too, should be fitted with automatic flushes.

The station, however, appeals to public favor, and visitors from Chicago, Montreal and outside points have commented favorably upon it.

Public Lavatory at St. John, N.B.

New Station Built a Couple of Years Ago—Not Kept in a Cleanly Condition—Need for More Conveniences, But Authorities are Apathetic.

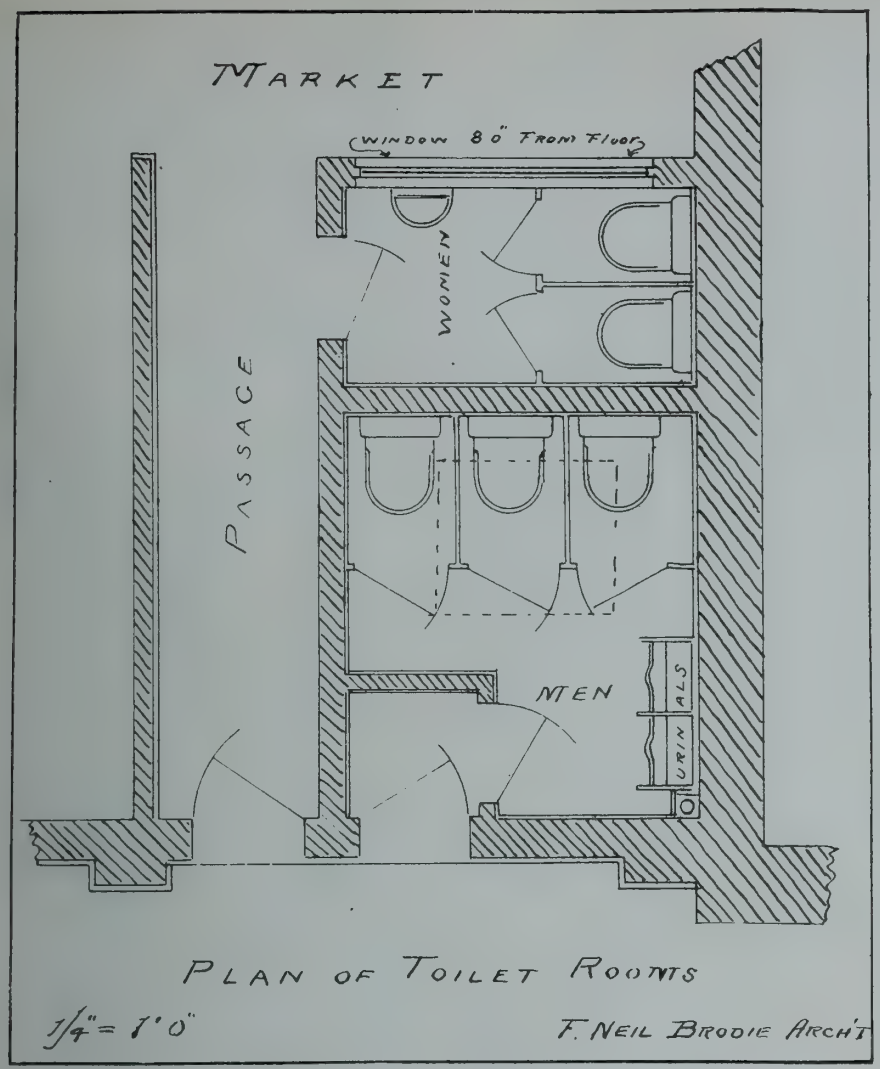
St. John, New Brunswick, with a population of over 50,000, can only boats of one public lavatory, that one being situated in the city market building in the heart of the business district. It was built in the fall of 1906 and while considered modern as regards its fittings, is much too small and its use too much restricted, (it being only open during market hours from 6 a.m. to 5 p.m.) to be termed a public convenience in the full sense of the term.

The lavatory was built to replace a former one in the market, which had become obnoxious and the city council decided that the new station should be available from the street instead of through the market as had been the case. Provision was made for separate rooms for men and women. The women's section has two closets and a wash basin, the entrance being from a passageway in the market building. The men's section has three closets, two urinals and a wash basin. The walls are of brick, plastered inside, and the floors of concrete. The women's section is lighted by a window facing the interior of the market and the men's section has its supply of light from a skylight. The entrance to the men's station is on South Market Street, a few steps from Charlotte Street, one of the main thoroughfares. The lavatory is heated by steam from a small furnace in the market building.

The total cost of the structure was in the vicinity of $1,600. R. J. Green was the contractor and for masonry work Robert Maxwell, a sub-contractor, was paid $822; R. E. Fitzgerald for plumbing received $540; J. H. Pullen for painting, $45, and the cost for heating was about $125.

Robert Wisely, director of public safety, under whose direction the lavatory was built, was desirous of having a larger station and of having it open at all times, but the council decided against it. It was claimed that to keep the station open all the time would require a man in charge day and night and the suggestion was turned down on the plea of expense. At present one of the market porters takes care of the lavatories. There is not sufficient room in either of the sections to make them as comfortable as they should be.

Some years ago St. John had several public lavatories, but they were crude



Floor Plan of Public Lavatory at St. John, N.B.

Interior of Women's Section of Public Lavatory at St. John, N.B.

affairs and when they became frozen up during the winter months, through not being heated they were done away with. The ferry toll houses on the eastern and western sides of the harbor are equipped with modern lavatories, but to use them a person must pass through the turnstile and contribute two cents toward the city revenues. The accompanying photographs of the market lavatories give some idea of their cramped construction as the photographer was unable to place his camera in any position that would afford a larger view. It may also be noticed that the places are not kept in a very cleanly state, a matter which the local newspapers have called attention to, on many occasions, but without effect.

Urinals in Men's Section.

The plumbers of St. John would welcome any attempt on the part of the civic authorities to build public comfort stations, but as the matter has been repeatedly brought forward without success they feel that there is no likelihood of anything being done for some time at least.

W. E. H.

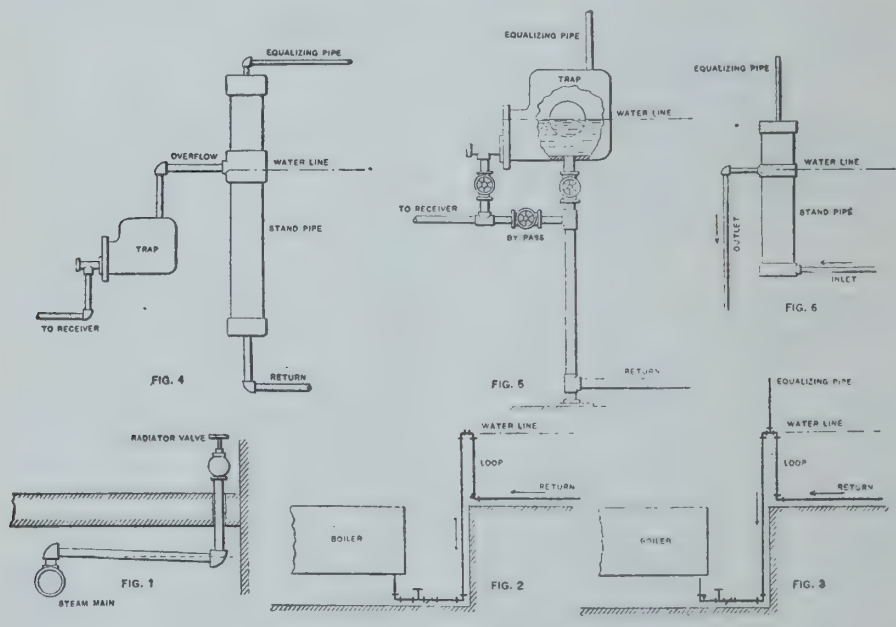
An addition to the Chatham Collegiate Institute at a cost of $15,000, will probably be made this year, in response to the peremptory recommendation of the Education Department.

Water Hammer in Steam Heating

Charles L. Hubbard in the Metal Worker

Probably no one thing causes so much annoyance to both owner and steam fitter as snapping in the pipes or water hammer. That it is caused by improper drainage of the steam and return pipes is a well known fact, but to find the exact location of the difficulty, and even then to ascertain just why that particular part of the system does not drain as it should is often perplexing and at times impossible.

Sometimes the trouble is simply a slow surging of the water in certain pipes, while in other cases it varies from a slight snapping to sounds which are similar to those produced by a blow from a heavy hammer and accompanied by severe vibration of the pipe. The singing is caused by a slightly higher pressure in the pipe, on the boiler side, which tends to hold back the condensation at the extremity and thus causes the accumulation of water to surge back and forth in an effort to flow toward the boiler against this pressure.



Causes and Cures for Water Hammer in Steam Pipes.

The snapping is caused by the hot steam coming in contact with more or less extended surfaces of cooler water which causes it to condense suddenly, and the steam rushing in to fill the vacuum thus formed causes the shock which follows. This is sometimes of sufficient force to rupture a fitting, and in the case of high pressure work especially, to result in serious damage.

When steam is first turned into a system of cold piping, the rapid condensation and unbalanced condition of the pressure within the system is bound to produce more or less water hammer for a short time, until the pipes become hot and an equilibrium is established; but this should not continue in any well constructed system of piping after it has had an opportunity to become warmed up. Persistent water hammer is a sign of poor design or faulty construction and no piece of work should be accepted by the owner until this has been remedied.

Water hammer often occurs in extended systems of piping operating under a low boiler pressure, as this is likely to fluctuate and thus unbalance the pressure in the system. Although such plants are much simplified by operating with a gravity return, they usually run more quietly when a moderate boiler pressure is carried and the steam is supplied through a reducing valve, which insures a constant pressure on the heating system at all times. This applies especially to buildings like cottage hospitals where there are long runs of piping and where quietness of operation is essential.

There are three points which, if carefully observed, will go far toward preventing water hammer in the average system, and these are sealing the return mains, giving a good pitch to the returns, which must necessarily be carried overhead, and avoiding connections allowing steam to enter returns which are under a slightly lower pressure due to their greater length, thus causing the condensation within them to be held back.

Fig. 1 shows a common cause of trouble in single pipe radiator work. A small pitch toward the foot of the riser causes water to collect in the bottom of the pipe, as shown by the dotted line. If this amount is small there will usually be only a slight singing and snapping, but in some cases this seems to produce a considerable condensation of steam at this point, causing a slight reduction in pressure which prevents the return water from the radiator from flowing back into the main. In cases of this kind the radiator gradually fills until a sufficient head is produced to force a portion of the water back against the steam pressure. Such a condition is accompanied by constant boiling and snapping as the steam is forced through this accumulation of water into the upper part of the radiator. It may be remedied by giving the connection a sharp pitch toward the steam main. A very slight pitch in the wrong direction will often cause the results described.

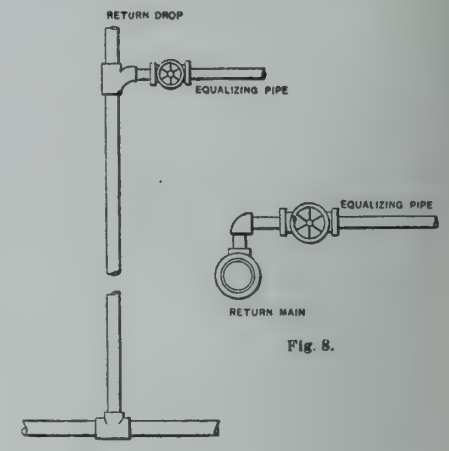


Fig. 8.

Fig. 7.

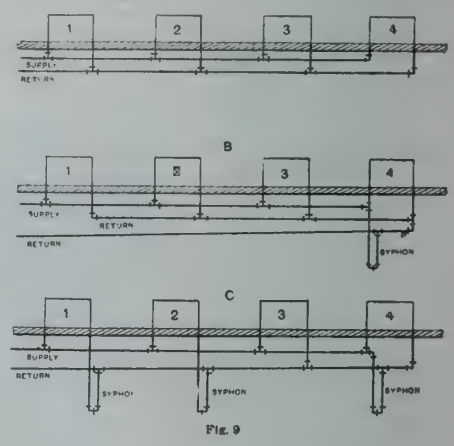


Fig. 9

Fig. 9 shows how the return from certain radiators may be "cut off," and also how this condition may be avoided. The arrangement in A is a more or less common one; a supply branch is run out to care for several radiators and an overhead return brought back, as shown. It is evident that the pressure reduces very slightly from one to four,

owing to the greater distance from the steam main ; hence the return from radiator 1 admits a pressure into the return slightly greater than that of No. 2, and No. 2 admits a pressure slightly greater than No. 3 and so on, thus producing a condition which tends to hold back the return water and cause singing and snapping near the end of the return line.

This can be avoided in two ways, as shown in B and C. In the former the extreme end of the return line starts with radiator No. 1, where it receives the highest pressure, the next lowest at No. 2, etc., thus reversing the conditions existing in A, so that the variation in pressure in the return line tends to force the water of condensation in the right direction instead of holding it back as in A. The end of the supply pipe in this case is dripped into the return through a water seal or siphon loop. This arrangement requires an extra line of pipe, but its more satisfactory operation is well worth the extra expense.

In C a single return line is used, but the first radiators are drained through siphon loops which seal the returns and prevent steam entering and holding back the water from the end of the line. These are only a few illustrations of the many conditions met with in practice, but serve to show what to avoid, in a general way, and it may be done in certain cases. The best prevention of water hammer is to seal the horizontal returns where it is possible to do so.

In the case of gravity return systems this is easily done by carrying them below the water level of the boiler. Sometimes it is not possible to do this on account of the boiler being placed at a lower level than the main basement in which the returns are carried. Figs 2 and 3 show improper ways which are sometimes used for establishing false water lines in cases of this kind. In Fig. 2, as soon as the horizontal return becomes filled with water and cuts off the steam supply from the loop a vacuum will be formed which draws the water up into it, thus forming a siphon which will drain the water out of the entire system and destroy the condition sought. Fig. 3, shows a method sometimes employed to break the siphon effect. This is all right in theory but seldom works satisfactorily in practice. This is because the steam in the equalizing pipe meets the cooler return water flowing over the top of the loop and is condensed so rapidly as to form a partial vacuum which will often draw the water out of the return mains as rapidly as the arrangement shown in Fig. 2.

A device supposed to overcome the faults of Fig. 3 is shown in Fig. 6. In this case a standpipe is substituted for a loop. The advantage of this is supposed to lie in the enlarged steam space above the water line, which is thought to reduce the condensation of steam entering through the equalizing pipe and so prevent the siphon effect. The writer has never happened to see one of these devices which worked satisfactorily. The overflow from the outlet constantly brings cooler water in contact with the steam and produces condensation and siphoning the same as in Fig. 3.

Fig. 4 shows the same arrangement of standpipe with the addition of a trap, for use when the condensation is discharged into a receiving tank instead of being returned to the boiler by gravity. The action of this is generally similar to that which takes place in Fig. 6. When the trap begins to discharge it usually sets up an agitation of the surface of the water in the standpipe, which in turn increases the condensation of steam above it, resulting in the old difficulty of siphoning and drainage.

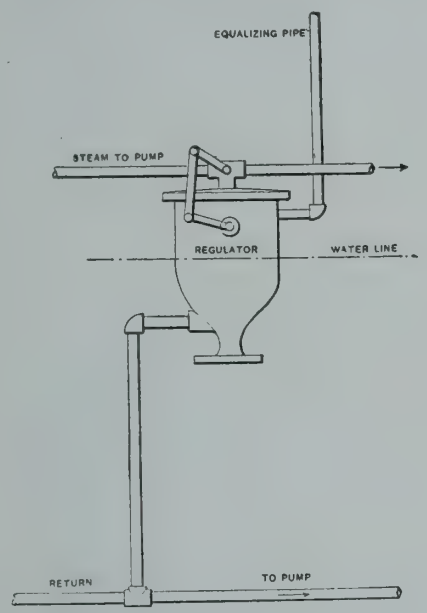


Fig. 10.

The arrangement shown in Fig 5 seems to overcome the difficulties mentioned better than any device which the writer has seen, although there are very likely others just as good. This may be used either with a gravity or pump return. It consists of a constant discharge float trap tapped to receive the return in the bottom and with an equalizing pipe connected into the top, as shown. It is provided with cutout valves and bypass for use when desired. The equalizing pipe should be 15 to 20 ft. in length, and connect with a return pipe which is always in use.

Figs. 7 and 8 show methods of connecting this pipe with a return drop and horizontal return respectively, the object being to make the connection so that no water will flow through it into the trap, it being desirable to keep the surface of the water in the trap as quiet as possible. In using this arrangement, open the valves and let the water in the trap rise to its normal level and the top fill with steam. Then close all valves, including the one in the equalizing pipe, and open the pet cock or air vent in the top of the trap. When the steam in the trap has condensed and the space, including the equalizing pipe, becomes filled with air, close the air vent and open the valves in the inlet and outlet of the trap, and then just "crack" the valve in the equalizing pipe sufficiently to admit steam pressure to the air contained in the upper part of the trap and a portion of the equalizing pipe.

By this arrangement the steam and water do not come in contact, being separated by an air cushion which transmits the pressure but prevents the rapid condensation with its resulting siphon effect. The inlet and outlet of the trap both being near the bottom, the surface of the water is not disturbed to any extent. Sometimes, for reasons which are not easily discovered, steam will gradually displace the air in the trap and cause flooding and siphoning, as in the case of a standpipe. In such cases the upper part of the trap may be filled with air and the valve in the equalizing pipe left closed. This will produce the desired result almost without fail, the confined air acting as an elastic cushion to maintain a pressure in the trap. After this device is once put in operation no further attention is usually required.

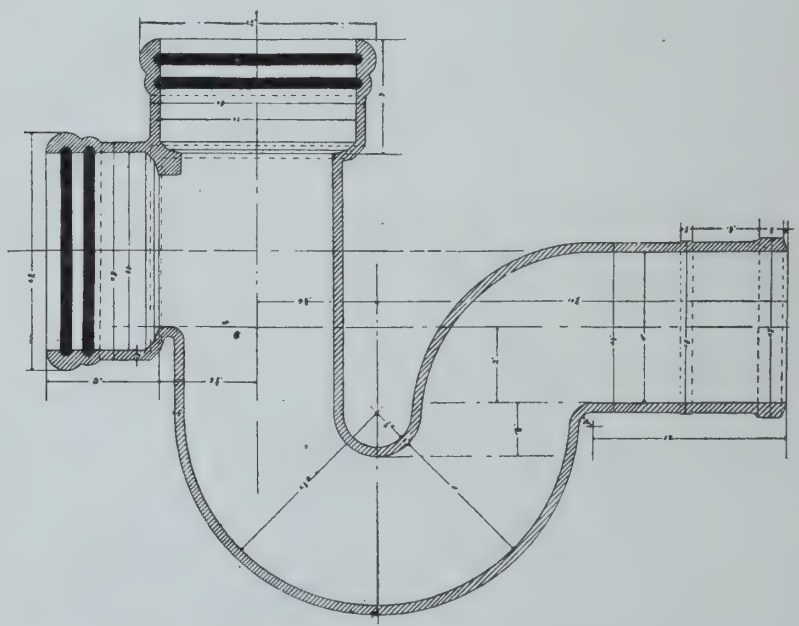
Fig. 10 shows an arrangement for maintaining a water seal by the use of a pump regulator set at the desired elevation and connected as shown. In this case no receiving tank or trap is used, the return water flowing directly to the pumps under pressure. This method works well when the whole system is operated under one pressure. If there are drips from several pressures the returns should be separately trapped into a vented receiver and the main returns sealed by the method shown in Fig. 5.

The present methods of wiring a building were criticized in a paper recently read before the Glasgow section of the British Institute of Electrical Engineering. The introduction of metal filament lamps leads to the expectation that lower voltages will be used for the wiring of buildings, thus making possible a cheaper system of installing the circuits. It was suggested that a metal-covered cable should be invented which shall be soft enough to be rolled up into coils for delivery and to be unwound and straightened for use in the building. The metal covering could be used as the neutral wire, or in isolated work as the return line.

House Sewers and Drains.

A Paper Read at the Recent Convention of the American Society of Plumbing Inspectors by Herbert F. Shade, Inspector of Plumbing and Sewerage, Victoria, B. C.

In treating of a subject so broad as that of house sewers and drains, it is necessary, in order to cover the most important issues, to be as brief as possible with the minor details, but I may enlarge to some extent on those parts which will provide the most interesting debate. Discussion of the respective merits and demerits of the interceptor trap, and the question of the advisibility of discharging rain and cellar waters into our private house sewers, is still open, and these questions are productive of such strong arguments from both sides, and also of good results that we are able to follow both sides and draw an intelligent conclusion as to what we consider the better method. It is not intended in what follows to dwell upon these matters, as they are pretty well understood, but to touch on other points, which, while not quite so important, are lost sight of to a considerable extent.



Regulation Running Trap, Extra Heavy 4x4 Inches.

It was said, not so very long ago, that a man's happiness was inversely proportional to the number of waste, gas and water pipes he had on his premises. This saying might be true to-day, if these modern conveniences be put in with the main idea of cheapness, and without a definite plan and proper inspection. For, while the complicated system of forty years ago does not nearly compare in the amount of material, with a modern job of the present date, there were, no doubt, a great many superfluities. But the day of working in the dark has passed, and to-day every pipe and fitting has its purpose.

We, in our capacities, are not supposed to take up the cudgel in supporting either the separate or combined system of sewerage; we look, for this advice, to engineers who make a life-study of these important subjects. It is difficult for us, moreover, to lay down any set rule in drainage work, which would apply to the conditions of either system, and while the interceptor trap argument might hold good in the case of a poorly ventilated and ill-constructed sewer, it does not hold water in the case of the separate system, where the ventilation and the efficiency of the house drainage and of the public system are treated as one, with the one idea of minimizing the possible production of sewer gas.

It is just as important to the community that the sewage be conveyed to its proper outfall in the shortest space of time without producing nuisance, as it is that it be conveyed a safe distance from the house before putrefaction sets in. It seems to the writer that this is the common error of the interceptor trap advocates—that everything should give way for the perfect safety of the house drain, regardless of the proper ventilation of the main sewers.

Construction of Main Drain.

The main house drain, which conveys the sewage from the house or building to the main sewer, whether it be of cast iron, galvanized iron or vitrified pipe, should be constructed in such a manner as to facilitate the removal from the house, in the shortest possible time, all waste materials, which are ordinarily discharged through the plumbing fixtures. It is therefore imperative that its grade or slope should be constant, and that its alignment should be as nearly perfect as practicable, and changes of direction should be avoided if possible, but, where necessary, they should be of a radius not less than four diameters of the pipe. These precautions all tend to give a constant velocity of flow, so that the sewage is carried with one flush to the main sewer.

An ordinary low-down w.c., discharging in a four inch soil line, with a two and one-half per cent. fall, gives an average depth of water-carriage of one and one-half inches, so that ordinarily, if the grade is steady, and the facility of the flow is not lessened by too frequent changes of direction, this depth is sufficient to carry excreta to the main sewer with one flush. If, on the contrary the slope of the drain is variable and changes of direction are frequent, the water-carriage is elongated, and the faeces come in contact with the invert of the pipe, and the efficiency of the flush is lost, and, in my opinion, it requires two or more flushes to remove this sewage to the public sewer.

The strongest argument in favor of the 3 inch soil line, is the advantage of the extra depth of flow. It is poor practice to enlarge portions of long soil lines or main drains unless the discharge into the line, at the point of enlargement, is above the carrying capacity of the pipe.

In earthenware or vitrified pipe lines, where changes in directions up to forty-five degress are necessary, it is good practice to make long, gradual turns, by using to advantage slightly bent pipes, and to leave near the center of the turn a Y pointing vertically for a clean-out or inspection. In the case of a deep drain this Y can be brought near to the surface. This style of clean-out

has considerable advantage over the ordinary way of plugging up the running end of the Y, as it provides for inspection without digging to the bottom of the drain, and a flexible rod is more easily operated than from the end of the Y.

Size and Fall of Drain.

In the best practice, in buildings or residences, the cast iron main drain is hung horizontally from the cellar joists, or fastened securely to the cellar walls, in as direct a line as possible to the main sewer or septic tank. All changes of direction are made with fittings of a large radius, particularly where the change is from the vertical to the horizontal. The size of these drains is determined by the conditions met with, such as the number of fixtures discharging into the line, and the possible frequency with which they may be flushed.

While the old rule of plumbers ; "give her all the fall you can" may not be considered as erroneous, still the writer is of opinion that it is better to establish a uniform grade of two and one-half per cent. to a point close to the sewer. However, I personally know of many cases where less than one per cent. fall was given. This surely necessitated extra provision for flushing, for, in small slopes, the velocity tends to decrease to such a degree that it elongates the flush, and consequently does not give the proper carriage.

It is not intended to further discuss the methods of installing cast iron main drains, as they are generally understood by the trade, but it is on that portion of the work outside the foundation walls that particular stress should be laid. From a point two feet outside the foundation walls to the sewer, salt-glazed earthenware pipe is the general practice. In some cities, to my knowledge, the importance of carrying out this portion of the work, with as much skill as the interior plumbing is completely lost sight of as it is left to practically unskilled labor. I will here illustrate two examples in a certain city where "quality is paramount" in plumbing and where a very fine line is drawn in its construction, but where this work is found wanting.

Vitrified Sewer Construction.

The method of construction of vitrified sewers is simple. First a proper grade should be struck, so that a uniform slope can be given to the main sewer. If it is not convenient to secure an engineer's level, a corrected carpenter's level will do for ordinary purposes where a slope of two per cent. or more can be given throughout. First erect a station "A" of convenient height over the main sewer, then measure off fifth feet from this in the direction of the drain, and erect a station "B". Set the level at station "A" and sight, when the bubble is in the center, on station "B". From this point on station "B" raise one foot, so as to give two feet fall in each hundred feet, thus establishing the grade. Set up all necessary stations, and line them up with the stations "A" and "B", and if it should be a long line, it is advisable to test the slope by the level every two hundred feet. After placing a line on the stations above the center of the proposed cut, establish the depth below the line at the junction of the main sewer, by means of a rod of convenient length. Mark the distance on the rod, and open the ditch to a depth below the line equal to this distance.

Laying the Pipe.

The ditch should be at least two feet wide, with vertical sides. Narrow ditching is false economy, it being difficult to obtain proper alignment. When the cut has been taken out to the same grade as the line, and the bottom made straight, attach a toe-piece to the end of the rod, and, fit the first length of pipe into the Y in the main sewer, with a fall proportional to the grade ; now rest the toe-piece on the invert of the first length, and mark this distance on the rod, and, as each length is laid, raise or lower it to suit this new mark.

It is good practice to put one strand of yarn in each joint, and more satisfactory to yarn and line up, as nearly as possible, from fifty to seventy-five joints before cementing. This does away with the possibility of the cement mortar taking its initial set too soon, and thereby losing its cohesive force. After having yarned and lined up the pipe, the annular space between the hub and the spigot should be filled with cement mortar of a consistency of one part best portland cement to two parts of good, clean, sharp sand, well mixed. The best results are obtained if the cement is pressed in with the hands (rubber gloves being worn), and the joints then troweled and leveled to a smooth finish. The interior of each joint should be carefully scraped with a stiff rubber semicircular scraper or broom suitable for the purpose, so as to avoid the possibility of any cement pressing through the joints, and lodging in the invert of the pipe. In back-filling great care should be taken that the joints are not disturbed.

In long runs of vitrified house sewers it is advisable to have a vertical Y left at intervals of seventy-five feet, and their position marked by stakes, and the opening carried conveniently near the surface, the same being closed with a proper stopper. These openings do away with the necessity of cutting hubs in the case of blockage of a long run.

Rain Water and Cellar Drainage.

The advisibility of the practice of discharging rain water and cellar drainage into our main house drains by connecting indirectly through floor or interceptor traps will now be discussed. In all instances where the public system is "combined", or where the surface drain in connection with the separate system is not of sufficient depth to drain cellars these waters are conveyed indirectly through these traps to the main sewer. Usually the vitrified sewer is carried sufficiently low, and an ordinary floor trap, with a side inlet for the tile drainage, which encircles the whole foundation, outside the walls, is placed in the basement.

Where the interceptor trap is used it is kept below the depth of the basement floor, and the tile drainage is carried indirectly to it through another trap. Not always does the depth of the main sewer permit the latter case without cutting down the grade of the main drain to an unreasonable extent. While there are many different ways of placing this cut-off trap for cellar drainage, its demerits and attendant evils are the same in all cases.

Two Weaknesses Illustrated.

I will now illustrate a case of an ordinary basement scheme of drainage with the untrapped main drain, where the floor wasting is conveyed over the top of the trap, and the tile drainage for the removal of the ground water is discharged into the side of the trap. In this method there are two serious weaknesses:—(a) In the case of a blockage in the main drain at any point beyond this trap, it is obvious that the sewage will naturally rise and discharge through the lowest opening. This would be the opening which receives the tile drainage, and, in consequence, through this tile, the whole soil adiacent to the foundation wall would be polluted, the open drain acting in this case as a distributor, and it is usually considerable time before the trouble is found out. I know of instances where it must have been in this condition for a considerable period, all the soil having to be removed owing to its polluted state. (b) In the summer season the seal of this trap may be lost by evaporation, and this would allow the sewer air to be carried and distributed through the tile drainage and the rainwater conductors.

Kind of Trap Recommended.

There is to my mind only one proper and safe way by which rain and cellar water can be discharged into house sewers, and this by connecting indirectly through a double-seated cast iron trap, with a seamless spherical copper float. There are several makes of these traps, but the trap manufactured by the

Miller Foundry and Specialty Co., of North Tonawanda, seems to be about the right thing. With any rise of the water in the trap from any cause, the float naturally rises to the upper seat and prevents further discharge into the opening which receives the drainage, and, in the case of evaporation the float settles on the lower seat at the bottom of the aperture. It will be noticed that the opening to receive the tile drainage is above the upper seal, thus avoiding any possibility of the soil adjacent to the foundation wall becoming charged with sewage, and obviating the danger, in the summer (due to the loss of the seal by evaporation), of escape of sewer air through rainwater conductors or direct into the cellar.

There is not the slightest doubt that the best way for the removal of these waters, where a public surface drain exists, is by making an entirely separate connection, or in residence work, where the fall of the ground permits, to convey this water to a rock sump under the ground, at some distance from the house.

Looking After the Welfare of the Workmen

In the New G.T.R. Shops, Stratford, Washrooms and Lockers are Provided for the Men and Fountains are Placed Through the Shops—Piping and Heating Systems.

The G. T. R. have recently completed new locomotive shops at Stratford, Ont., for the Middle and Southern Divisions from the St. Clair and Detroit Rivers east to Niagara Falls, Fort Erie and Toronto. While not the largest in Canada, they are among the most up-to-date. The welfare of the men has been carefully considered and a modern heating system and sanitary equipment has been installed.

The buildings are heated by the Sturtevant system of indirect radiation, utilizing the exhaust steam from the power house. The exhaust steam passes through the coils and is drawn back to the power house by pumps. It may be necessary at times to assist the supply of exhaust steam by turning line steam into the heaters through a reducing valve. These units have been installed and they were sufficient to keep the buildings at an even heat during the severe weather of the past winter.

The fans are operated by small horizontal engines, the exhaust steam from which passes into the heating coils as are additional assistance to that supplied from the power house. Fans, heaters and engines are located on the balcony, the hot air being distributed through a system of underground ducts with openings in walls and in the end of locomotive pits on the south side of the building. A small heating duct is also provided under the balcony, and underground on the north side of the building, having vertical outlets through the floor.

Wash Room.

A sufficient number of lockers are provided for the workmen. One wash basin is provided for every four men. These lockers and wash basins are located in lavatory rooms directly under the heating fans. These rooms consist of two floors, 10 inch ceilings. This arrangement makes the lavatories and lockers easily accessible from both the main floor and the balcony, stairs being provided immediately adjacent to these rooms, extending from the main floor to the balcony.

Wash Room in the Locomotive Shops, Stratford.

The equipment of these rooms, consisting of basin, and urinals as well as the carefully guarded and sanitary urinals through the shops, were supplied by the Standard Ideal Co., Port Hope. The illustration shows one of the wash rooms. Drainage is provided in the floor to take care of drips, etc.

The water supply for the shops is pumped from the Little Lakes, two and a half miles distant. In the case of this supply being insufficient, provision is made for water supply from the city mains. The drinking water is pumped from artesian wells on the site and fountains are arranged at convenient positions in the shop. An analysis of the water shows it to be pure, in fact, it has been impossible to trace one case of sickness to it. Fire hydrants are arranged in the yard and at different parts of the shops.

Sewer System.

The shop plant is served by a sewer which handles the drainage from all water closets, wash basins, engine pits, etc. This system connects with the city septic tanks and contact beds, which are located three miles from the shop site, near the southwest of the city. The new shop is also provided with a storm water system, which collects the yard and roof drainage. This outside sewer is vitrified tile to a point four feet outside the building line, where it is joined by cast iron soil pipe inside the buildings. This storm water system discharges into a small creek west of the plant.

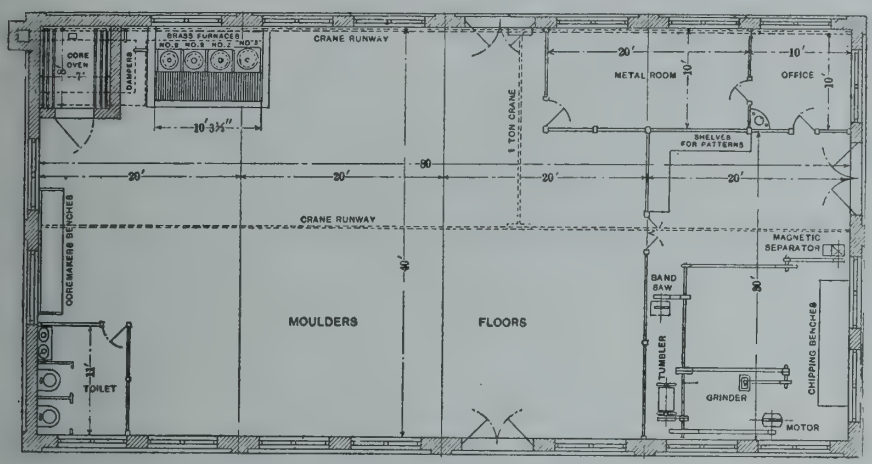
The water closet is a separate building near the midway. The management thought it healthier to have a separate building for this. It is situated near the midway convenient to the buildings around it and equipped with automatic flushing closets.

The health of the men is carefully taken care of. Not only has sanitary equipment been provided but a Railroad Y.M.C.A. provided with baths, swimming ppols, etc., is accessible to the employes.

Design for a Model Brass Foundry

Plans for a Small Foundry With Capacity of a Ton a Day—Layout Can Be Changed Without Altering General Idea.

A model arrangement for a brass foundry having a melting capacity of about one ton per day was recently given in The Metal Industry, New York, the plans being capable of being enlarged or made smaller without in any way changing the general idea of the design. The plan will, therefore, prove of value to small foundries comtemplating extension, or those entering the business.

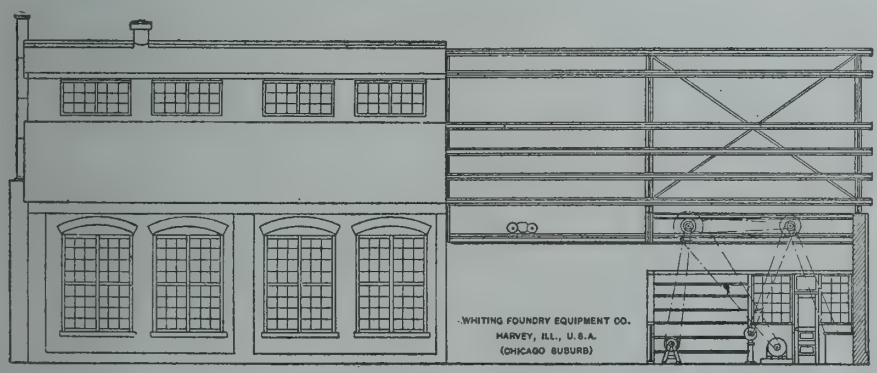


Plan for Model Brass Foundry.

The layout as shown on the drawing is for an output of about one ton per day, depending, of course, on the class of work made. The building of brick and steel construction is 80 feet long and 40 feet wide.

The melting equipment consists of three furnaces, 17 inches inside diameter for No. 35 to 50 crucibles; one furnace 20 inches inside diameter for No. 60 to 90 crucibles. These furnaces are arranged for natural draft with a pit in front covered by an iron grating. They are constructed with steel shells and heavy cast iron tops made in two pieces to allow for expansion. The bases are made in one piece and fitted with cast iron drop type grates which are arranged so that the grate may be readily dropped from the floor without the necessity of going into the pit. This point is found especially convenient in brass foundries, as they can drop the fire immediately in the event of a broken crucible. The furnaces are also arranged so that forced draft may be applied at any time should it be necessary.

Adjoining the furnace is the core oven which is provided with the necessary flues and dampers so that gases from the brass furnace may be used to dry the cores. This oven is provided with a roof supported on steel framing, and is fitted with adjustable side racks for cores; also provided with a sheet steel swing door.



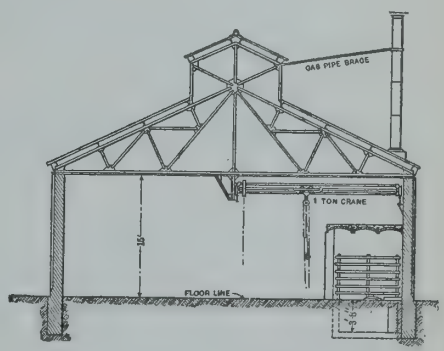
Side Elevation. Longitudinal Section.

Along one half of the foundry and spanning over furnaces is located an overhead traveling crane, one ton capacity, about 18 feet span. This crane is especially convenient for lifting pots from the furnace and handling flasks and crucibles for heavy castings. The runway being extended the full length of the building allows the crane to travel in the cleaning room as required.

The cleaning room is provided with the necessary chippers' benches, tumbler, grinder, band saw for cutting sprues and magnetic separator. These machines are all driven from line shaft, which may be operated by an electric motor.

Adjoining the cleaning room is the office, which is near-by so as to be convenient to oversee shipments. The metal room is located between the office and the furnaces so that all mixtures, etc., may be made and distributed under the especial attention of the foreman.

The total cost of machinery equipment on this job would run in the neighborhood of $1,500. This includes brass furnaces and linings, floor grates covering pits in front of furnaces, core oven, a coremaker's bench, chipper's bench, band saw, magnetic separator, grinder, tumbler, electric motor, line shaft, stack and crane. A building of the size shown, with brick side walls and structural steel trusses would cost approximately $4,000.



Traverse Section.

Lawrence Mott, author of Canadian stories, and grandson of the late millionaire, J. L. Mott, of the J. L. Mott Iron Works, New York, was taken from his home, near White Plains, in a very mysterious fashion, recently and was placed in a sanitarium. Mott is about 26 years old. He graduated from Harvard in 1907. While a freshman he was sued for breach of promise by Christina Marsh, who demanded $25,000 on the ground that he had promised to marry her and then refused. Mott's defence was that he was already married and had been for two years. It developed that he had quietly married Miss Carolyn W. Pitkin, of South Braintree, Mass. With her he went on a honeymoon to Canada, and wrote some surprisingly good stories of native life there, among them "Jules of the Great Heart," and "The White Darkness."

NEWS OF THE TRADE IN CANADA

W. R. McCallum, electrician, Ottawa, has assigned.

Paquin & Lachapelle, electricians, Three Rivers, Que., have been registered.

The Hutcheon Shackleton Electric Co., Saskatoon, is succeeded by Fletcher & McGarvey.

Henry Meadows, Windsor, has the plumbing contract at $190 for the addition to the market building there.

Ed. Mackness has secured the contract for the plumbing of Westland Gregg's new house on Sheldon Avenue, Chatham.

R. J. Cluff, managing director of the King Radiator Company, Toronto, was in Vancouver last week on a business trip.

Drinking fountains will be installed in Toronto's public schools if a motion made by Trustee James Simpson is adopted.

The Fred. Armstrong Co. has the plumbing and heating contract for the Vokes Hardware Co's. $40,000 store at Toronto.

Fred. Ruppel, Elmira, has secured an office position with the Warden King Co., manufacturers of boilers and radiators, Toronto.

The contract for the installation of a filtration plant at Edmonton has been awarded to the Roberts Filtration Company, Philadelphia.

Walter Benson, master plumber, Toronto, was fined $10 a fortnight ago for making alterations in a house plumbing job without a permit.

Chas. Rattray Selkirk and Eric Selkirk, St. Louis, Montreal, have registered as a plumbing company under the name of Selkirk Bros.

Frank I. Lessard and Jos. Jean Hamel, have registered under the name Lessard & Co., to carry on a plumbing business at Montreal.

Edward Hurley, Fredericton, is moving his plumbing establishment to the Sampson building, Cor. King and Carleton Streets, that city.

The Wallaceburg Brass Works installed new machinery last week. The manufacture of tops for fruit jars of all kinds has been commenced.

J. P. McTomney's plumbing establishment at Bathurst, N. B., was practically destroyed by fire recently. There was an insurance of $800 on the stock.

Fred. Armstrong, Toronto, has the plumbing contracts at the Fern Avenue school and the Girls' Home, that city. The two contracts amount to $1,100.

Sarnia will likely drop the proposition to heat Front street by the exhaust steam from the waterworks. It would be too costly and might not be successful.

The Rutley Warming and Ventilating Co., will instal heating and ventilating systems in Fern Avenue school and the Girls' Home, Toronto, at a cost of $1,840.

Chatham has another plumbing firm. Mitchell Bros. are just now opening a plumbing shop at 179 King Street West, in the ground floor of the Alexandra Block.

Prof. W. Muir Edwards, of the University of Alberta, recently addressed a public meeting at Medicine Hat, on water purification and the disposal of that city's sewage.

A recent visitor to Vancouver was Sandy Green, of Green & Lester, plumbers and steamfitters, Winnipeg. He and Mr. Cluff, of Cluff Bros., Toronto, left for the East together.

Several new oil furnaces are being installed in the brass foundry of Somerville, Limited, Toronto. The plant is working on large corporation orders for Winnipeg and Victoria, B.C.

In an address before the Montreal Canadian Club, Dr. E. P. Lachapelle pointed out some of the present defects in Montreal's sewerage system. He urged proper treatment of water and sewage.

The engagement is announced of the marriage of D. McCallum, of The D. McCallum Plumbing Co., Fort William, Ont., to Miss Helen McLaughlin, Sterling, Scotland. The wedding will take place in Scotland early in July.

Port Arthur and Fort William plumbers refuse to tender to contractors in a bulk sum for work. They want to tender direct to the builder, as they hold they have lost money in the past owing to many contractors going to the wall.

About three thousand dollars was bid for Fred Somerville's auto at an auction sale at Toronto, but this being below the reserve price the sale was not completed. The machine, when bought by Somerville, Limited, a year or so ago cost about $7,000.

The Chatham Water Department will provide facilities for repairing water meters at cost. This decision was come to on the suggestion of Mayor Westman who was not deterred by the fact that he was in the plumbing business himself from thus cutting into a little side line.

The citizens of Winnipeg are urging the city council to take up the question of a reform of the plumbing and sanitation laws. The aldermen profess to be as willing as ever to modernize and bring up to date the city's plumbing statutes, but they are dilly-dallying with the subject.

Some nice contracts were placed by the Ottawa civic committees. The plum of the lot was that for cast iron pipe, which was landed by T. S. Kerby & Co., at $15,065.10. McKinley & Northwood secured the lead pipe contract and the James Robertson Co., Montreal, the contract for brass goods.

John MacWatt and Arthur A. Frost have formed a partnership to carry on a plumbing and heating business at Moose Jaw. The firm continues the plumbing business recently purchased by Mr. MacWatt from G. K. Smith, and also adds thereto steam-fitting and steam and hot water heating.

A central heating system is to be installed at the Lindsay court house, which will heat the whole block. The jail, registry office and the court house will all be heated by one furnace. The new heating system will be a vast improvement on the present one, and the fuel bill will be considerably lessened.

Letters patent have been asked for the incorporation of the Chatham Wrench Co., with a capital of $10,000, for the manufacture of a newly invented pipe wrench, for which the company has the exclusive British and Canadian rights. Those interested are W. D. Sheldon, R. J. Gardiner and R. L. Brackin, Chatham, and M. S. Ewen, Detroit.

Strong petitions against Ottawa's plan to empty the Ottawa South sewage in the Rideau river a few hundred yards above the intake pipe for the Ottawa East water supply, signed by several hundred residents of Ottawa South, Ottawa East and Gloucester, were presented at the last regular monthly meeting of the Gloucester council.

Walter Seaton and Frank Walter, medical students, Toronto, locked themselves in a small bathroom to scour off an application of tar and shoe blacking. A gas stove was burning in the room and it soon burned all the oxygen in the air. Occupants of the house, becoming alarmed, burst open the door and found the two boys unconscious. They recovered after being given restoratives and fresh air.

At a recent meeting of the Chatham, Ont., Water Commissioners, renewals of plumbing licenses were granted to R. McG. Coyle, C. R. Bowers, John McKay, J. H. James, Watt & Sons, Edward Mackness, J. C. Wanless, Campbell & Callahan, and Westman Bros. Ex-Chairman Sheldon favored the appointment of a plumbing inspector, and Mayor Westman stated that the City Council intended considering a plumbing by-law.

A fire which burned for four hours totally destroyed the brass foundry of

William Keating, at Toronto, on March 11, causing a loss of $15,000. The principal loss was the destruction of the stock of brass goods, plumbers' supplies, etc., and the machinery. The stock was valued at $7,000 and the machinery at about $8,000. The building was erected at a cost of about $1,800. The insurance amounted to $11,000. Fifteen men were employed in the foundry.

According to the annual report of the American Radiator Company for the year ended January 31 net profits were $901,254, compared with $899,724 in the preceding year, and an amount equal to 13.83 per cent. earned on the $5,000,000 common stock, compared with 13.79 per cent. in the previous year. The surplus after paying dividends, is practically the same as last year, $391,254, as compared with $389,724. The balance sheet shows total assets of $12,386,747, including plant account of $8,611,259. This includes the company's Canadian plant at Brantford.

Dr. Pakenham, Dean of the Faculty of Education at Toronto University, gave an instructive address on "Technical Education" to the members of the Toronto Plumbers', Gas and Steam Fitters' Union recently. He said it was of the utmost importance that every workman should become interested in this matter, upon which the progress of the country so largely depended. He thought the time had arrived when Technical schools should be extended and provided with modern equipment to impart instruction to the rising generation along industrial lines, so that the youth of the country could be trained for their future avocations in the most scientific manner.

The Court of Appeal sitting at Winnipeg, in the case of Colter v. the Plumbers' Union upholds the lower court judgment that picketing in the case of a strike is illegal and sustains the lower court's award to the plaintiff of $2,000. Neither party was allowed costs. The original suit was brought by the master plumbers of Winnipeg against the journeymen plumbers and members of local unions, to restrain them from interfering with the plaintiffs and the men they had hired during the plumbers' strike, and to recover damages for injuries they considered had been received. The case was tried before Judge Mathers, who held that the defendants had broken the law, and had thereby rendered themselves liable to damages for inducing those who remained in the plaintiffs' employ, or who afterwards entered the same to leave their employment. There was no doubt the plaintiffs were seriously damaged by the strike and what followed it. The Plumbers' Union contemplate carrying the case to the Supreme Court and eventually to the Privy Council. The total amount of costs and damages assessed against the local union is twenty-five thousand dollars, while a perpetual injunction against picketing has been granted.

The report of the sewage experts, J. D. Watson of Birmingham, England, and Rudolph Hering, New York, who were engaged to prepare a report on the sewage disposal question for Toronto City Council, was read at a recent meeting of the Council but was not acted upon. It will be considered by the Council after the Board of Control and Committee on Works have dealt with it. The experts have taken similar views to those of City Engineer Rust both as to the Morley avenue site being the most desirable for the septic tanks and the advisability of concrete construction for the trunk sewer, except that they recommend an invert of brick, one course, for the lower half of the sewer, on top of the concrete. The experts state that the sewage of this city should be disposed of satisfactorily, not only without fouling the shore at any point, but in a manner that would be unnoticed in the lake itself. The elimination of solids from the tanks is recommended, and the cleansing of each pocket of the tanks is recommended, and the cleansing of the tank daily by an electric current to pump the solids to the west end of Ashbridge's Bay. Thus the sewage will not be exposed to the atmosphere until it reaches the western end of Ashbridge's Bay where it will be mixed with the dry refuse and spoil which have been deposited there to fill up the marsh. If the admixture is not deposited in layers more than two feet thick at one time nitrifying bacteria will shortly reduce the whole to an inoffensive substance.

TRANSFER OF SUPPLY BUSINESS.

The transfers of the Labatt Mfg. Co., Toronto, and the Labatt brass factory at London, have not yet been completed although an announcement is looked for daily regarding the sale of the supply business at Toronto to a man until recently connected with another Toronto supply house.

The purchase of the brass works at London is being considered by several U. S. concerns who want to get into the Canadian market, but this deal may not be closed for several weeks.

VENTILATION OF PASSENGER COACHES.

From the description of the seventy-five steel passenger cars recently ordered for the Pennsylvania Railroad, it is evident that the company are in a fair way to secure the fireproof and collision proof qualities which are sought in the design of the cars. Outside of mahogany window sashes and seat frames, the cars will be entirely free from wood fittings, the total weight of wood in each car being only 300 pounds out of a total weight of 116,000 pounds for the entire structure. The collapse of the car in collision is guarded against by the provision of a central steel box girder 24 inches wide and 9 inches deep, extending throughout the floor framing for the whole length of the coach. This massive construction will receive the full brunt of a collision, and serve as a defense against that disastrous telescoping, which is the most fruitful source of fatalities in accidents of this kind.

In a properly ventilated car the whole of the air should be renewed at frequent intervals; it should be warmed, and a proper amount of moisture should be imparted to it. The mere provision of steam pipes, and the opening of a few ventilators in the roof, will not secure the desired results. The air will be heated, but not properly renewed; and a considerable portion will be endlessly circulated between floor and ceiling and dried out by steam heat to the point at which it becomes uncomfortable, if not positively distressing.

In the new Pennsylvania coaches the air enters by two hoods on diagonally opposite corners of the car roof. From the hoods it is led down by vertical ducts, placed within the sides of the car, to a horizontal duct adjoining the side sill and running the full length of the car between the floor and the subfloor. Above the floor, for its full length, along the sides, are rectangular ducts in which are placed the steam heating pipes. The outside air enters the hoods and passes through the ducts beneath the floor, to openings into the duct containing the heating pipes. Here it is thoroughly warmed and is finally discharged into the aisle of the car through outlets provided beneath each seat. The air is liberated through ventilators in the roof, which are furnished with valves that regulate the escape of the air. The forward movement of the car forces the air in under a slight pressure, and the restraining action of the discharge valves maintains this pressure and prevents drafts of cold air passing in through cracks in the doors and windows. The system is an excellent one, being founded on thoroughly sound principles of ventilation; but we would suggest that, if provision could be made for adding the requisite amount of moisture to the warmed air before its admission to the car, its hygienic qualities would be improved, particularly for passengers whose throat and nasal passages are subject to catarrhal and kindred troubles.—Scientific American.

CONTRACTS AND BUSINESS OPPORTUNITIES

Municipal Undertakings.

A new main sewer will be constructed at Sarnia.

Simcoe, Ont., ratepayers have passed a by-law authorizing the instalation of a waterworks system.

Tenders will be received until March 23, 1909, for the proposed waterworks system at Burlington.

Meaford ratepayers have passed a by-law authorizing the instalation of a waterworks filtering basin.

The Hamilton sewers committee will procure more land for the proposed west end sewage disposal works.

Fort Erie ratepayers will vote on a by-law to authorize the raising of $50,000 for waterworks purposes.

Estevan, Sask., ratepayers will probably vote on March 12 on by-laws to raise $30,000 for fire protection purposes.

Tenders are being called by the Ladysmith, B.C., city council for the construction of the sewerage system recently passed by the citizens.

The Roberts Filtration Co., of Philadelphia, Pa., has been awarded the contract for the instalation of a filtration plant at Edmonton, at cost of $16,500.

The contract for piping, valves, fittings, etc., to be used in connection with Brandon's new mechanical filters to be installed at the waterworks has been awarded to Brown & Mitchell, Brandon, at $1,615. Thirteen tenders were received in all.

Tenders are being called by the Victoria city council for fifteen 12-inch double-gate valves, twenty 8-inch double gate valves, twenty 6-inch double-gate valves. Valves to have two bell ends, brass faces and spindles and to turn from left to right. The nut on the head of spindle to be 1¼-inch square.

Though little has been heard of late concerning the project to pipe natural gas from the Port Dover field to London, it must not be supposed that it has been allowed to drop. As a matter of fact, the company is in hope of beginning the laying of pipes early in the coming spring. Parties in this city and Toronto are interested in the proposition.

General Building Notes.

The Arlington Hotel, Sarnia, will be enlarged.

John Hayman will erect a large apartment house at London.

F. Fuller, Vancouver, will erect a $24,000 business block.

J. T. Hutson, Toronto, will erect an $18,000 block of dwellings.

P. A. Alder will erect two dwellings at Vancouver to cost $10,000.

John Garvey, London, will erect a five-storey grocery warehouse.

W. A. Clark, Vancouver, will build an apartment house to cost $20,000,

L. Mazza will erect a block of six dwellings at Toronto to cost $14,000.

S. R. Willinsky, Toronto, may erect a $25,000 dry goods store and office building.

Work will soon be started on the $30,000 building for the Y.W.C.A. at Hamilton.

New Masonic headquarters will be erected in New Westminster at a cost of $20,000.

The Canadian Express Company will erect a new express office at Sydney Mines, N.S.

The G.T.R. will next month begin the erection of a twelve-storey office block at Winnipeg.

Plans for the Quebec Bank's new building, to be erected at Montreal, have been completed.

Plans have been prepared for the new building to be erected at Three Rivers, by the National Bank.

C. S. Douglas & Co., Vancouver, will build a $22,000 apartment and store structure in the spring.

Rhodes, Curry & Co., Amherst, N.S., will erect a $30,000 bungalow at Argyle, N.S., for a Boston millionaire.

It is stated that the Royal Bank are contemplating the erection of a new building at Campbellton, N.B.

It is stated that W. A. Snelgrove intends adding 20 rooms to his hotel at Melville, Sask., early in March.

It is stated that the C.P.R. have plans for the extension of their hotels at Banff, Lake Louise and Glacier.

The Massey-Harris Company will shortly commence the erection of a distributing warehouse at Melville, Sask.

W. W. Cross proposes to erect an apartment and store building at Winnipeg to cost between $30,000 and $40,000.

J. F. Robertson, of Robertson & Cantwell, painter, Fort William, will erect a $25,000 office and store building in the spring.

Robins, Limited, Toronto, report the sale of property to a purchaser for the erection of a business block to cost $70,000.

The G.T.R. car ferry "Ontario No. 1" at Cobourg, is having changes made in the plumbing and steam-heating apparatus.

It is stated that a company is being organized in Vancouver for the erection of a large residential hotel to cost in the neighborhood of $200,000.

Albert Adams has been awarded the contract for the concrete bathing house to be erected at English Bay, Vancouver. His price is $24,600.

Wm. Lyall, of Peter Lyall & Sons, Montreal, has purchased a large block of land in that city on which he will erect twenty semi-detached residences in the spring.

James Frederick has been awarded the contract for a large summer home to be erected on Jarvis Point, near Brockville, for Geo. C. Boldt, of the Waldorf Astoria, New York.

Property has been purchased by the National Bank for the erection of a large new building at Montreal. The present bank building there will also be considerably extended.

J. S. Heyler, E. W. MacLean, J. W. Weart and the other owners of a lot on Hastings Street, Vancouver, are having plans made for an eight-storey building, which will cost $65,000.

Couture & Aubrey, Cobalt, have been awarded the contract for a three-storey and office building to be erected for The Nipissing Stores Company. The structure will have steam heating and lighting.

The Royal Hotel, Vancouver, will build a substantial addition to their present buiding. Thirty additional rooms will be added and about twenty of the number will be provided with private baths.

P. H. Finney, Toronto, has prepared plans for a two and a half storey dwelling to be erected at Weston for Mr. Irwin, of Nobleton, Ont. It will have plumbing with septic tank, hot air heating, electric lighting and electric bells.

Public Buildings.

A town hall will be erected at Lanigan, Sask.

A new fire hall will likely be erected at Lethbridge.

About $100,000 may be spent for new schools at Lindsay.

A $10,000 municipal hall is proposed for Estevan, Sask.

An addition will be made to the Central School at Galt.

An addition will be built to Harkins' Academy, Newcastle, N.B.

A new and larger immigration hall will be built at Calgary.

Tenders are called for a new Government building at Kincardine.

A $48,000 Baptist Church will be built at Calgary this spring.

A new public school will be built at Riverside, a suburb of Calgary.

An addition will be made to the Stratford Collegiate Institute.

Oshawa ratepayers have voted the sum of $20,000 for a new high school.

It is proposed to establish a consolidated rural school at Burnside, Man.

Municipal buildings to cost $10,000 are proposed to be built at Estevan, Sask.

Mount Forest ratepayers have voted in favor of erecting a new public library.

The contract for the new children's hospital at Halifax will shortly be awarded.

Sir Lomer Gouin recently stated that a new court house would be erected in Montreal.

The congregation of St. Aidan's parish, Toronto, has decided to erect a new church.

A movement is on foot to raise $12,000 for the erection of a general hospital at Ingersoll,

It is proposed to build an addition to the Infirmary in Renfrew, Ont., at a cost of $25,000.

A new Catholic Church, to replace the one recently burned, at Bedford, Que., will likely be built.

Wilson, Son & Arnold, Chatham, have prepared plans for an addition to the Tilbury Public School.

The members of St. George's Church, Windsor Mills, Que., have decided to erect a new church.

The Jarray and Melick council is considering the erection of a new school building near Kenora.

A permit has been issued for the erection of Shea's new theatre, Toronto, at a cost of $260,000.

Winnipeg hospital commission has made a report recommending that the general hospital be enlarged.

The Port Arthur City Council have accepted a grant of $30,000 from Andrew Carnegie for a public library.

The congregation of Murray Street Baptist Church, Peterborough, are considering the erection of a new building.

The congregation of the Lethbridge Baptist church is contemplating the erection of an addition to their church this year.

It is stated that preparations are being made for converting a business block at Stratford into a modern theatre.

The attention of Toronto's Board of Control has been called to the need of a new building for the House of Industry.

The N. B. Provincial Government has promised financial aid towards the construction of a tuberculosis hospital at St. John.

The Minister of Railways recently stated that it was the intention of the Government to build a new station at Truro, N.S.

Dr. Roberts, Hamilton's Medical Health Officer, will ask the board, at its next meeting, to consider the erection of an isolation hospital.

The trustees of the Port Colborne Presbyterian Church are arranging to rebuild their church, which will cost probably two thousand dollars.

Plans have been prepared for the erection of a new two storey school building at Prince Albert, to be erected by the Separate School Board at a cost of $8,000.

Tenders have just been taken by George Rankin, Hamiota, Man., for the erection of a Presbyterian church at Oakner, Man.

The contract for the new building for the Halifax Children's Hospital has been awarded to Walter Lownds at about $15.000.

A proposition is before the London Board of Education regarding the erection of a technical school in conjunction with the collegiate.

A project for the erection at Halifax of science and library buildings for Dalhousie University, is being considered by the authorities of that institution.

Plans have been prepared for the new building to be erected by the congregation of Christ Church, Deer Park, Toronto, at an estimated cost of $20,000.

Roland W. Lines has been instructed to prepare plans for a new 16-room high school building, to be erected at Edmonton this year at a cost of approximately $75,000.

Sydney, C.B., ratepayers will be asked to vote on a by-law to raise nearly $142,000, $50,000 of which is for the new academy and $20,000 for public school extensions.

Hon. Christopher Chisholm, Commissioner of Public Works for Nova Scotia, is asking tenders for the instalation of a heating system in the new technical college at Halifax.

Darling & Pearson, Toronto, are revising the plans for the Faculty of Education and Pedagogy buildings, which will be erected this year, on a smaller scale than previously intended.

The new opera house at Leamington, now being constructed by Jos. Henry, will have an electric lighting plant of its own, using 200 lights for the front and interior of the building.

Residents of Westboro, Woodroffe and Ottawa West decided to erect a school building at Westboro and a smaller building at Woodroffe, to be completed by Oct. 1, cost not to exceed $18,000.

The outlook in the building line at Victoria for March is very promising. Several large structures are contemplated which, with the Chambers St. school will run well into $100,000 in values.

Sydney, N.S., school committee recommends the construction of a new and thoroughly modern academy with as little delay as possible. It is estimated that the sum of $50,000 would be required.

The committee in charge of movement for a Children's Hospital at Halifax have accepted the tender of Walter Lownds for the building. The contract price is $15,057, and the building will be completed during the coming summer.

Smith Bros & Wilson, Regina, have been awarded the contract for the erection of the land titles building at Saskatoon. The contract price is $26,700. Work on the building will be started in the spring.

Tenders are being called by the Dominion Government at Ottawa for heating apparatus to be installed in the public buildings about to be erected at Ladysmith. A lavatory and water-closet are to be put in.

The trustees of the Toronto General Hospital are considering the appointment of an expert to pass upon the plans for the new hospital. The plans submitted call for expenditures respectively of $1,350,000 and $1,210,000.

Knox Presbyterian congregation, Peterboro, has decided to build a new church which will cost in the neighborhood of $30,000. The work of erecting the All Saints' (Anglican) Church has been begun, and will be completed, if possible, this year.

About $100,000 will be expended in repairs, new buildings, etc., at the provincial hospital, at St. John, N.B., which was recently badly damaged by fire. A separate building of brick and stone will be erected for the heating and lighting plant and laundry.

Raymond, Alta., ratepayers decided that another election would be held to vote on raising money to build a 12-room school building. Plans had previously been prepared for an 8-room building, but it was found that this would not give sufficient accommodation. Estimated cost of 12-room building is given as $30,000.

The Dominion Government intend to add a $14,000 addition to the Astronomical Observatory at Ottawa; erect a new $125,000 departmental building; spend $93,000 on alterations to the Parliament Buildings; build a $30,000 addition at the Royal Mint; and erect a $400,000 Victoria Memorial Museum.

Among the buildings to go up this year in Toronto are a new fire hall and police station at East Toronto; fire hall on Perth Avenue, and an addition to the main pumping station. Then there is the General Hospital and the additions to Western and Isolation hospitals, some university buildings, and a technical school, several warehouses and many dwellings.

PLUMBING AND HEATING MARKETS

MONTREAL.

March 20.—Considering the time of the year, trade is very good. Plumbers are ordering steadily, and as they are only buying their material as they want it, it is evident that plenty of work is offering. Prospects improve every week, and there is a confident feeling among the supply houses that good business will open up in the spring. Building permits already show an improvement, and with the busy state of the architects, the activity in realty market, and the reports of extensive building by the C. P. R. and other large corporations, everything looks favorable for a record year. The opinions seems to be that while building will be good in the spring, the real rush will be felt in the fall, when building activity will reach a record height. If these prospects turn out to be correct, plumbers should have plenty of work before them $

The market is not in such a settled state as it was, and price cutting has been prevalent. Changes in brass goods are expected but the new lists are not yet out. The tendency is for prices to be firm despite the state of the copper market. Lead and solder are unchanged. The discount on iron pipe has been reduced to 72½ on the ¾-inch to 4-inch, while on galvanized it is now 62½. The lower sizes are unchanged. Some cutting is going on in soil pipe but no general change has been made. Owing to the cutting that has been prevalent in radiators the base discount is now at 60.

LEAD PIPE—Quotations on lead pipe are unchanged. Supply houses report good business, and although a fair amount of pipe is being used it is evident that plumbers are stocking up more freely. We quote : Pipe and waste at 27½ off. Traps and bends at 50 ; calking lead at 5c per pound.

IRON PIPE—In sympathy probably with the reduction in the States the discount on iron pipe from the ¾-inch to the 4 inch has been reduced to 72½, while the same sizes in galvanized are now 62½. The smaller sizes are unchanged. Good business is doing, and orders awaiting April shipment are steadily accumulating.

SOLDER—There is a fair movement in solder. With stocks light in plumbers' hands, a good development should take place at the opening of the building season. We continue to quote 19½c for half and half, and 18½c for wiping.

BRASS GOODS—The new list has not yet been issued, and for the time being old prices maintain. The demand is fair and prospects begin to look much better than they did.

SOIL PIPE—Orders are showing very satisfactory strength, and it is evident that a very strong movement will take place at the opening of spring. Soil pipe is the first to feel the spring demand and the better the movement in this line the better the prospect for other articles. Although changes seem impending the general price is still as follows : Light, 3 to 6 in., 60 off ; medium to heavy, 2 to 6 in., 70 off ; 8 in., heavy, 40 off.

RADIATORS AND BOILERS—Owing to the cutting going on for some time, radiators have been reduced in price, and the base discount is now 60. Trade has been fair for the time of the year, and prospects look good. There is no change in the discount on boilers, although an alteration is thought likely. We quote radiators at 60 off, and boilers at 50 and 10. Steam fittings are now about 70 off.

METALS—There is no change in metals beyond a cut of 5c in lead, although the whole tone of the markets is weaker. We quote : Ingot copper, $14.50; ingot tin, $31.50; lead, $3.65; pig iron, Middlesboro No. 1, $18.50 to $19; Summerlee, $20. Heavy scrap red brass is 10½c.; light copper, 10½c; heavy lead, 2½c.

TORONTO.

March 18.—A decidedly better feeling exists than was the case a fortnight ago, Cutting has not been entirely eliminated. But some lines show firmness and advancement.

Radiators are still at the low prices, and manufacturers complain they are unable to make as much profit as formerly. Even should prices advance now and firm up business would not right itself until well into the fall, for the majority of orders are booked at present prices.

The new thing of the month is the decline in pipe prices. All sizes from ¾ inch up are away off color, and makers are not booking nor looking for trade at the prevailing figures. The comedown is due to importations of pipe from the United States, where prices were cut in anticipation of customs tariff changes. Advices from Pittsburgh say the pipe men are coming together and the prediction is hazarded that market prices will go up to the old figures on April 1.

Enamelware is going up in price, and a firmer tone is noted in brass lines, especially in the better grades, the easier tendency reported in last issue being on cheaper goods.

The cheap low-down closet combination is now on the market. This line sells for $13.50 with an additional 65 cents for floor flanges. In common with enamelware generally, the higher class combinations are advancing. That is the base rate is the same as usual, but an additional cost is put on flanges.

Business is not yet so good as anticipated, and not nearly so good as one would wish. Inquiries continue plentiful and judging from the number of building permits issuing in this section, and the reports from travelers, the trade should soon open up well. Enamelware is the big seller just now.

BRASS GOODS—Quietly steady are brass goods at present. New price lists are being printed for issuing next week. On the whole they are about the same as those prevailing since the opening of the year. The better grades are slightly higher and the cheaper goods are at a lower figure. Ground work is now 65 per cent., standard compression 65 straight, and cushion work is 55 per cent.

IRON PIPE AND FITTINGS—The cut in prices in the U. S. is responsible for importations of pipe at low figures. This fact has brought down all prices. Black pipe prices are now for ¾ inch, $3.16 ; 1 inch, $4.54 ; 1¼, $6.19 ; 1½, $7.43 ; 2, $9.90 ; 2½, $15.81 ; 3, $20.76 ; 3½, $26.13 ; 4, $29.70. These figures show a substantial cut. In the case of ¾ in. the reduction is 38 cents, and in that of 4-inch pipe the reduction amounts to $3.78. A proportionate cut is made on all intermediate sizes. These prices are the lowest which have prevailed for seven years. Canadian manufacturers also quote these prices, but say they are not looking for business at these figures. Galvanized pipe also participates in the cutting. ¾ inch is $4.31 ; 1, $6.19 ; 1¼, $8.44 ; 1½, $10.13 ; 2, $15.50 ; 2½, $21.56 ; 3, $28.31 ; 3½, $35.63 ; 4, $40.50. Malleable and cast iron fittings are unchanged. Those who profess to know look for advancing prices.

ENAMELWARE—This line is in great demand just now, and baths, especially are going out in all orders, and in some cases in orders calling for nothing else. Prices are advancing, and this, no doubt is the direct cause of such heavy buying.

CLOSET COMBINATIONS—In sympathy with all enamelware lines closet combinations are advancing. That is the base rate will be the same, but an additional charge will be made for flanges. This is the case also with the new cheap low-down combination which is now put on the market to offset cheap U. S. goods. This combination's sale price is $13.50, but a charge of 65 cents is added for floor flanges, bringing the price up to $14.15.

BOILERS AND RADIATORS—Manufacturers are still quoting 60 per cent., the low price. There is no cutting under this figure because none is possible. Even should prices advance now business

would not right itself before the fall, as a great deal of booking has been done at the low quotations.

Soil pipe, solder, lead pipe and oakum are at the old market quotations, with the possible exception of oakum, which may be had at a cut price for quantities.

VALUE OF FUEL FOR HEATING.

An authoritative statement on the economy of the use of briquets in house heating boilers is made in the government report of the recent tests of fuels at St. Louis and Urbana, Ill. A careful comparison of the results of the tests on the coal and the briquets seems to show no advantage in the briquets over coal of suitable size for house heating boilers. Briquetting a good bituminous coal, according to the experts, would be justified only when slack is used for materials and the gain from briquetting would lie almost entirely in the more favorable size of the fuel. This gain would be less for coals that coke readily than for noncoking coals or for coking coals that are not suitable for domestic purposes in the form of slack. Briquets from such coal burn fairly well, as they allow the air to pass up through the fuel bed.

The experiments showed that the pitch binders used are not suitable for a furnace working at the low temperatures common in a house-heating boiler, as they volatilized and in most cases escaped unburned or were deposited on the surface of the boiler. In the St. Louis tests this coating burned off once or twice a day, causing a high temperature in the flue and, as a consequence, danger from fire.

ALMOST AS GOOD.

Little Ikey came up to his father with a very solemn face.

"Is it true, father," he asked, "that marriage is a failure?"

His father surveyed him thoughtfully for a moment.

"Well, Ikey," he finally replied, "if you get a rich wife it's almost as good as a failure."

BILL TO LICENSE PLUMBERS.

A bill to license plumbers in cities of 10,000 and over came up for a hearing in the Connecticut State Legislature last week. It provides for a board of plumbing inspectors in all such cities to be appointed by the Board of Health, one member to be a master plumber, another a journeyman plumber and the third member from its own number. If there is no Board of Health the Mayor shall appoint two members to act with the regular health officer. The bill was supported by a number of plumbers, physicians and others interested in sanitary conditions, and opposed by several manufacturers who are accustomed to having plumbing done by their own workmen. Definite action was postponed on account of the discussion lasting until late in the day.

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WANTED—A second-hand power machine. State whether electric, gasoline power, or belt driven, to cut ¾" to 6" pipe. State make, how long in use, and best spot cash price. Send replies to Box 813, PLUMBER AND STEAMFITTER, Toronto. (7)

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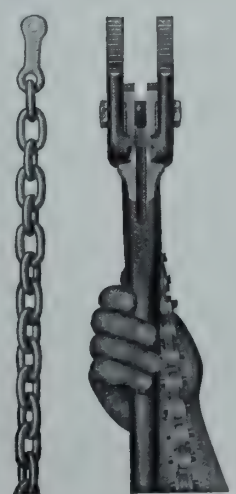

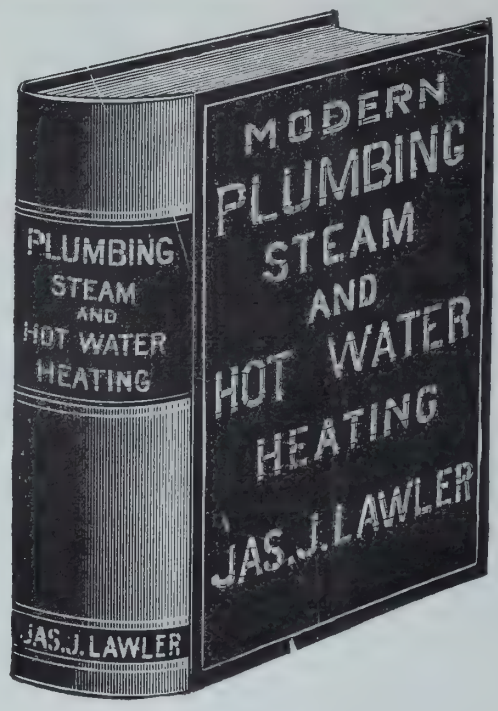

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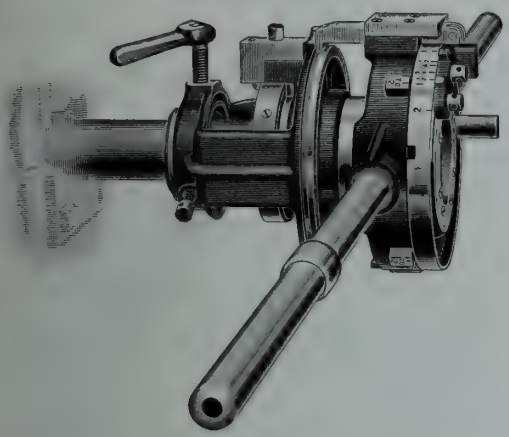

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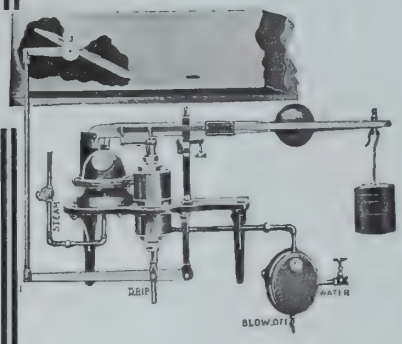

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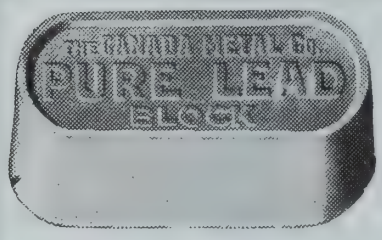

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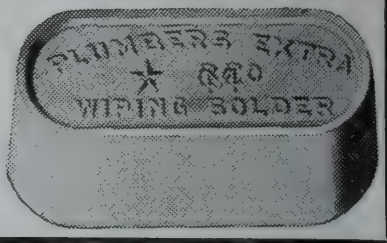

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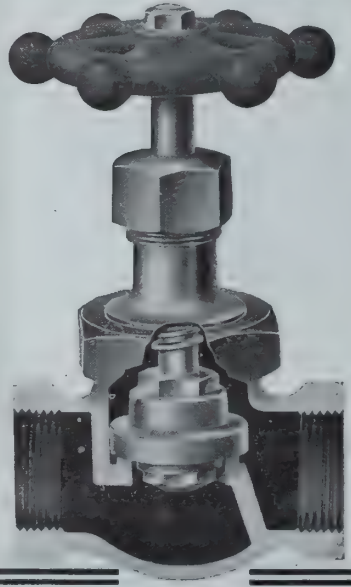

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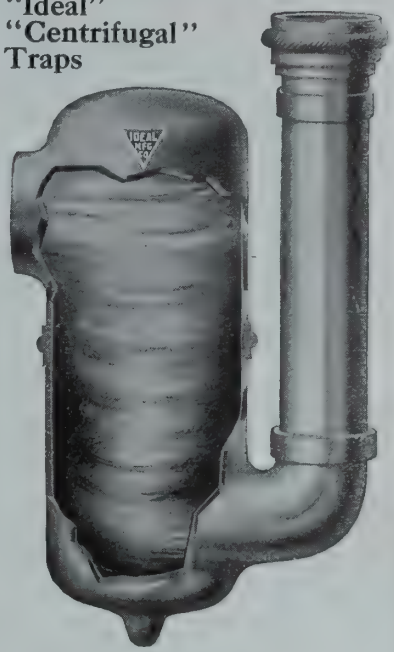

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

MONTREAL, TORONTO AND WINNIPEG, APRIL 1, 1909

SEVERAL IMPORTANT TRADE CHANGES.

In Plumber and Steamfitter of April 1, it was announced that an important deal was on the tapis in which two or more of the plumbing supply businesses in Toronto were concerned. Events during the past week have brought the matter to a head although there are rumors of several changes yet to come.

The taking over of the supply business conducted by Somerville, Limited, by the Standard Sanitary Manufacturing Company, Pittsburg, has been followed by the announcement that the Labatt Manufacturing Company, supply business at Toronto, will be merged into the Somerville business, and the combined business conducted by the Standard Sanitary Mfg. Company of Canada.

Another important change is the withdrawal of Warden King, Limited, from the Toronto field where they have been doing business with Cluff Brothers as selling agents. The agency for Daisy boilers has been taken over by the King Radiator Company, of which R. J. Cluff is managing director.

The past few months have seen many changes in the plumbing and heating supply business in Ontario but the past week's changes, recorded in the news columns of this issue have been the most important trade happenings in recent years. As stated before, however, further announcements will likely be made in our next issue.

SANITARY ASSOCIATION ORGANIZED AT WINNIPEG.

Citizens of Winnipeg have formed a sanitary association, the objects of which are to improve the general sanitation of the city, and it promises to be the largest and most representative association in the city.

The work of the organization shall include the necessary improvements in all branches of sanitation. The outstanding evils that will receive immediate attention are the pollution of the rivers and the defective house drainage and plumbing. It is rumored that some of the worst smelling sewers are badly constructed and are retaining large quantities of decaying sewage in deep hollows that are generating dangerous gases which escape to the streets through the manhole covers.

The urgent necessity of a modern building law, including house drainage and up-to-date plumbing, with competent inspection and testing of everything affecting the health of the citizens, is a matter that the association may bring under the attention of the city council, so that the new law may be prepared without further delay and adopted before the building season begins.

The sanitary association will also give careful attention to the important question of technical education of tradesmen whose work is closely connected with the subject of sanitation and the health of the people. That includes the plumbers, heating engineers, and ventilating engineers.

EXCHANGE MAKES GOOD SUGGESTION.

The reason most plumbers and steamfitters when submitting estimates figure on installing cheap goods is because they know the other bidders will do so, and their bids must be somewhere near the bids of others. Why not submit two bids? One specifying the rottenest goods the market affords, and telling the truth about their flimsy, defective character, the other based upon using only advertised branded goods, behind whose satisfactory operation you, the wholesaler and the maker stand with guarantees? Which hand wins?

SANITARY RECOMMENDATIONS.

The Sanitary Committee of the New York State Master Plumbers' Association in their report submitted at the convention this month made the following recommendations:

I. Venting of traps from the crown be abolished, and the circuit or continuous vent used.

II. All traps should be vented regardless of style or manufacture.

III. When possible all cities and towns should provide comfort stations at suitable places. These stations should in all cases be located above ground, and proper provision made for light and air.

IV. All work should be inspected and tested.

V. All public toilet rooms such as those in cafes, railroad depots, etc., etc., be inspected from time to time, and kept in thoroughly sanitary condition.

VI. Where tanks are used for drinking water, same should be of compressed air type, and not open and uncovered.

VII. The ball cocks in all closet tanks should be so arranged that the water could not be shut off until at least five gallons are in the tank, and only syphon tanks should be used.

VIII. The use of improvised galvanized iron mesh strainers for urinals should not be allowed.

IX. The use of such strainers is becoming the custom in cafes and other places. No strainer should be

permitted unless it is thoroughly cleansed with each flush of the tank.

X. Only closets of the syphon or washdown type should be allowed.

XI. All floor slabs at closets, and all partitions, etc. at urinals should be of impervious stone, marble or slate.

XII. No plumbing fixture, when possible, should be set in a room or apartment which is not directly connected to outside air and light.

As the plumbing work of a building is the most important, from a sanitary view, the matter of cost should not militate against the work being done properly ; and we submit that economy is best practiced when the plumbing is done in a thoroughly first-class manner.

TRY TO ELEVATE THE TRADE.

With the opening of the building season the plumber starts on his yearly grind, and with this comes his chance of doing a little more to elevate his calling in the eyes of the world. Probably no trade has more abuse directed against it than the plumbing trade, and certainly no trade has been the butt of so many satirical observations. "Sneer at the plumber and his honesty of purpose, and you create a laugh," is a correct summing up of the situation.

Against this mass of calumny the plumber has to fight hard, and that he is fighting and winning is shown by the gradual appreciation of the plumber among intelligent citizens. He has a long way to go yet, but perseverance and a determination to be true to the best interests of his trade, will accomplish his purpose.

Let every man, therefore, this coming season be determined to elevate his trade, To put in the most conscientious work, to conform with specifications, to fight tooth and nail against faulty plumbing work, and above all, not to cut another plumber's price. Let him show to the landlord and to the tenant that he is no mechanical automaton. Let him show observers that he is guided by theory as much as by practice, and that on his work depends the perfect sanitation of the house. If people fully realized that their health, the most precious of all things, depended upon the skill of the plumber, and that to do the work properly the latter must be skilled and intelligent handicraftsmen, then they would begin to place plumbing on a higher plane than they do. This will come in time, but the plumber must force his merits before their eyes, for most people are blind where they should most fully see.

Let plumbers, generally, be determined to strive their uttermost to elevate their calling in the eyes of the world. Let them show by their work that they are honest workmen, skilful workmen, scientific workmen, and are striving for the best thing of all—the health of the country. Let them be true to their own fellow-workmen, and by the exercise of these qualities they are bound to impress upon the world the merits of their profession, and create a just appreciation of their qualities as a conscientious body of men.

WINNIPEG'S PROGRESSIVE EXAMPLE.

In 1905 Winnipeg civic authorities ordered the abolition of all outhouses where there was sewerage accommodation, and this work has been followed up so persistently since that time that practically every house situated upon streets with sewers and water mains has been connected, with the exception of a few cases where sewers have recently been completed and the notices have not yet expired.

To illustrate the practical working out of the order we give the following figures: In 1905 there were 6,339 outhouses in the city; in 1906 they were reduced to 4,912; in 1907 to 3,433; in 1908 to 2,269; in three months of 1909 they have been reduced to 1,625. The city proper has completed sewerage construction and few outhouses can now be found in the main city.

The Elmwood section, until recently, has been void of a sewerage system. At the present time 700 plumbing notices have been served in Elmwood, and it is safe to predict that within one year less than 100 outhouses will be found anywhere within the city limits.

It has been remarkable the way this matter has been responded to by the citizens. In some cases, however, it was severely pressed by the health department. Many houses that could not afford the sanitary plumbing equipment were aided by the city to instal the apparatus, and the taxes will be regulated to cover the expense.

Toronto and Montreal can well follow Winnipeg's example in compelling its citizens to provide modern conveniences and live under healthy surroundings. In Toronto, the district known as St. John's Ward, immediately surrounding the city hall, is a blot upon the good name of the city, property owners being allowed to maintain outhouses in the most crowded district in the city. The editor of Plumber and Steamfitter has passed places where the stench is most offensive to passers-by and consequently detrimental to the health of the foreign population which is herded in the neighborhood.

THE BEST YEAR EVER.

The outlook for the coming season's trade in both plumbing and heating is the brightest in recent years and already permits for buildings in several Canadian cities have broken all previous records.

Yet the season opens with very unsatisfactory conditions prevailing in many branches of the trade. In boilers and radiation, for instance, prices were cut to 60 off a few weeks ago but this has been shaded to 60 and 10 in many cases and even lower prices are reported. One 12 room house heating job in Toronto including a boiler and 800 feet of radiation is reported to have been installed for $385 while another job at London was almost as low. With prices on this basis steamfitters can make no money and manufacturers take long chances in selling goods to fitters who do the low priced work.

Instances have been given in these columns before of plumbing jobs in Toronto being done for the bare cost of labor and material, or in case these cost $130 an extra $5 or $10 may be added to cover the cost of doing business.

The master plumbers and fitters are undoubtedly shortsighted in failing to support the efforts made to reorganize the trade in Toronto and throughout Ontario but the manufacturers and jobbers must take their share in the responsibility for the demoralized conditions prevailing. If boiler and radiator manufacturers kept the prices of their product more stable and uniform it would be an object lesson to steamfitters. And plumbing supply men by maintaining prices and discouraging the sale of cheap goods would also help the trade in getting on a better basis.

It has been deservedly said that the plumbing and heating trade in Ontario is getting a reputation for cheap work and it seems about time that a halt was called by both supply men and masters and an endeavor made to win a record for quality rather than cheapness.

Pollution of Streams by Sewage, Etc.

Theodore Horton, Chief Engineer for the New York State Department of Health, in an Address Before the Health Officers of That State Gives Some Practical Information of Benefit to Plumbers.

As a general statement we may say that the discharge of domestic sewage or industrial wastes into any body of water will have a deleterious effect upon its quality. When we consider, however the more important questions involved, viz., questions of public health and life and of the comfort and convenience of communities who must reside near waters polluted by such wastes or who must use them for drinking or domestic purposes, our statements must be made with more caution and with many qualifications.

Necessary Distinctions.

It will be essential, then, at the outset, to make sharp distinctions or differentiations, first as to the character of the waste products that may be discharged into a stream, and secondly, as to the manner in which they may affect the welfare of a community through which the stream flows. The polluting materials may, for instance, be derived from the waste products of mills or industries of a variety of kinds, such as tanneries, pulp mills, silk mills, creameries, etc., or they may be derived from the waste product of domestic life such as sink water, wash water, excreta or other human wastes. Again, these different classes of wastes may have very different effects upon the general welfare of a community—some of them affecting life and health, and others affecting only comfort, convenience and the enjoyments of life.

Since these distinctions are very important in themselves, and since it is essential for every health officer to know under what conditions pollution may become only offensive or only dangerous or both offensive and dangerous, I will outline the characteristic differences between the various classes of wastes, and the extent and conditions under which they become offensive or become dangerous to health. Before doing this, however, I will describe briefly the local conditions which generally lead up to the pollution of our streams and the problems which generally confront our local boards of health.

Conditions Leading up to Pollution.

In the history of nearly every community that has developed to the stage of possessing public improvements or utilities, there is an early period when the population is more or less scattered, and when the problem of sanitation is a simple one. Under these conditions it is ordinarily an easy matter to dispose of the waste products of the household in well constructed and properly maintained vaults or cesspools. There soon follows, however, another period when the population has increased and has become more congested, when industries spring up through the community, and when following the inevitable demand, a public water supply is introduced.

The consequences of these new conditions are at once apparent. These cess pools or vaults, which up to this time have performed their proper functions without danger or offense, now fill rapidly and, unless frequently emptied, they overflow and become the source of recurrent nuisances. The liquids soon leak or filter through the overtaxed soil to the cellar walls or the well, disseminating filth in their path.

It is at this stage in the growth of a community that the more serious troubles of our health officers arise. It is at this time that the people of a community, driven by the inevitable nuisances and expense of cleaning and maintaining these vaults and cesspools, seek relief by constructing drains and overflows into the nearest streams. It is at this time that the industries, upon whose operations the support of the community depends, find it more and more difficult to satisfactorily dispose of their wastes, and they likewise discharge them into the streams. It is at this time, finally, when the State Department of Health in response to numerous complaints also has to face its dual duty, under the health law, of prohibiting the construction of these drains, and impressing upon the popular mind and the governing officials that the time has arrived when a sewerage system is imperative.

Different Classes of Wastes.

To understand the significance of these conditions, then, and to distinguish intelligently between those factors which affect health and those which affect only comfort, the health officer must have a definite knowledge of the composition of these two classes of wastes—the domestic sewage and the industrial wastes. Considering first the domestic sewage we find that it is derived primarily from the water supply. It is, in fact, the spent water supply, which after being used in the household for the various domestic purposes such as cooking, washing and removal of excreta, imparts to the sewage certain ingredients of a more or less objectionable nature. The less objectionable ingredients are of course those derived from such sources as cooking and washing, while the more objectionable are those derived from human excreta.

This domestic sewage, then, will contain variable amounts of either organic or mineral matters, which we usually speak of as "solids." Numerically these solids will amount to about 1-20 of 1 per cent. of the weight of the sewage, of which about 1-3 is in suspension and 2-3 in solution. Again, of the suspended solids, about 2-3 is organic and 1-3 is mineral; while of the dissolved solids about 1-3 is organic and 2-3 mineral.

It is, then, this small amount of organic matter that gives to sewage its dangerous and offensive quality, for it is the organic matter which contains in living form vast numbers of bacteria of both pathogenic and harmless types, and, in dead or inert form, matter which, under certain conditions, purifies and gives off offensive odors. On the average this sewage will contain bacteria ranging in numbers from one to two million per cubic centimeter. Of these we may say that approximately 10 per cent are of the colon type (i. e., the bacillus which is the normal habitant of the human intestines); a very much smaller percentage, impracticable of estimation, are of a pathogenic type derived from patients suffering with communicable diseases; and the remaining large percentage are of the harmless type derived from the innumerable sources from which sewage is derived.

Changes in Sewage.

So long as this sewage is perfectly fresh there will be little, if any, odor to it. When, however, it is allowed to stand, its chemical and biological quality changes rapidly. These changes are the result of the life processes of the bacteria present in the sewage, through which the organic matter, consumed as food by these bacteria, are transformed into other compounds. The aerobic bacteria are usually the first to act under

these conditions, and so long as oxygen is present and available this transformation of the organic matter will be one of oxidation or nitrification. As soon, however, as all of the available oxygen is exhausted, the aerobic action ceases and in its place anaerobic action is set up. That is, the anaerobic bacteria, acting in the absence of oxygen, are able to break up the organic matter and transform it into compounds which are quite different from those resulting from aerobic action. This anaerobic action is one largely of deoxidation or denitrification, and the products are usually of a less stable character, i. e., more decomposable. The most important feature is that during this anaerobic decomposition, which we usually term "putrefaction," sulphuretted hydrogen, ammonia and other objectionable gases associated with decomposition, are liberated with the resultant creation of nuisances.

It will be seen, then, that there are two characteristics of domestic sewage that are very important. One is the possible presence of germs of communicable diseases which may be transmitted to any person who uses the water in any manner by which it may be taken into the human system. The other is the presence of organic matter which in the absence of sufficient oxygen undergoes anaerobic decomposition and gives off putrefactive odors with the production of a nuisance.

Characteristics of Industrial Wastes.

Let us now consider the case of industrial wastes. The first characteristic, if such it may be called, is the great variation in composition, concentration and volume. We have, in fact, as many varieties of industrial wastes as we have industries. Some of these wastes are composed largely of a mineral nature, such as the wastes from wall paper and certain chemical establishments, while some are largely of an organic nature such as wastes from creameries and silk mills. Again, some of these organic wastes are largely in suspension, such as the wastes from tanneries and paper mills, while others are largely in solution, such as the wastes from sulphite mills and silk mills. The most important characteristic, however, is that these wastes in themselves, and unmixed with domestic sewage, ordinarily contain no disease germs. They may contain a large amount of harmless bacteria, such as the large proportion of those found in domestic sewage, but they do not, unless mixed with domestic sewage, contain disease germs, nor even colon bacilli.

It must be evident, then, that these wastes, in themselves, cannot directly transmit germ diseases, although they may sometimes contain poisonous materials which may inhibit, and even kill, fish and other forms of life. They may be, and frequently are, largely responsible for nuisances, and there is little question but that some of the most serious and extensive nuisances in the state have been caused by these wastes. These nuisances, however, have usually been associated with wastes that contain large amounts of organic matter, especially in solution, where the oxygen available, contained either in the wastes themselves or in the stream into which they are discharged, is insufficient to prevent putrescibility.

Why Pollution Should Be Prevented.

From what has been said then of these two classes of wastes I believe we can now make a few generalizations in regard to the pollution of streams and the conditions under which this pollution may become offensive or dangerous to health.

(1) That the discharge of domestic sewage into a stream may become dangerous to health when it is derived from a community in which communicable diseases have been prevalent; and the danger is proportional to the prevalence of such disease other conditions being equal. Communicable diseases are more or less prevalent in all communities. It follows, then, that the presence of any domestic sewage pollution in a stream will create a menace to the health of those communities and residents who live below on the stream and use the water for domestic or drinking purposes.

(2) That the discharge of domestic sewage into a stream may, in addition to the danger to health, become a source of offense or nuisance when the available oxygen carried in the sewage or in the stream into which it is discharged is insufficient to prevent anaerobic conditions, in which case putrefactive and offensive odors are given off.

(3) That industrial wastes, in themselves and unmixed with domestic sewage, rarely, if ever, contain pathogenic bacteria, that may survive and become the means of transmission of communicable diseases.

(4) That industrial wastes may occasionally contain poisonous ingredients that may inhibit and kill fish and other forms of life:—such, for instance, a bacterial life under which condition the natural agency of purification and nitrification is arrested.

(5) That industrial wastes, especially those containing considerable proportions of organic substances, may become the source of serious nuisance through the emanation of offensive gases resulting from anaerobic or septic action. These offensive gases may emanate from deposits of organic matter along the bed and banks of the stream or they may emanate from the surface of the water itself.

Conclusion.

I believe the principles just stated cover in a simple and general way the more important points which I meant to bring out and emphasize in regard to the pollution of streams. I have made no attempt to take up in detail the more technical questions, such as the degrees of danger or offense that may be created under various conditions. In fact such data can not be accurately stated, even in general terms, but will depend almost entirely upon local conditions as to composition of sewage volume of stream flow and other factors. I have, for similar reasons, made no attempt to enter into the question of sewage purification, which is a distinct and separate subject vitally associated, however, with the pollution of streams.

TORONTO BRASS FACTORY BUSY.

Asked regarding reports that the General Brass Company was to be taken over as a part of a larger consolidation Mr. Woodbridge, general manager, stated that he knew nothing about the rumors as he had never been approached with a proposition to sell and nothing had been considered by the shareholders.

Speaking of the condition of trade, Mr. Woodbridge also gave information indicating that there is no reason why his company should want to make any change other than to enlarge their plant. In spite of the unsatisfactory conditions of the brass trade, his foundry is running fully manned with 60 men working three nights overtime each week and orders in hand would keep the plant busy until the fall without any additional orders being taken. "We received three telegrams Saturday calling for goods on order," said Mr. Woodbridge, "and we are over 3,000 behind in our orders for closet tanks."

With business in this shape the company has found it necessary to withdraw its salesmen, Messrs. Laidlaw, Burchard and Conway, in order to fill booked business and look after the jobbers' trade and mail orders.

PUBLIC LAVATORY FOR BERLIN.

G. M. DeBus, secretary of the Berlin, Ont., Parks Commission, writes Plumber and Steamfitter to say that his board have decided to erect a public comfort station in Berlin's beautiful and modern park.

Water Systems for Country Homes

Description of the Utility and Installation of a Compressed Air Water System. by M. J, Quinn, Toronto, in Reply to a Request From a Nova Scotia Plumber—Advantages of the Pneumatic System Outlined.

"I have a country job of plumbing and my customer wants me to instal a compressed air water system. The house is two and a half storeys, but tank could not be placed in the attic. A bathroom and kitchen sink will be installed but I would like to read an article in the Plumber and Steamfitter before undertaking the work. An explanation would probably interest many other readers."

Wipe Joint.

The tendency found nowadays nearly everywhere, among a certain class of people, to build for themselves homes beyond the confines of thickly populated districts, has accentuated the demand, which was already rapidly developing among the better class of farmers and other dwellers in rural locations, for simple and not too expensive means of supplying the ordinary comforts, such as good water supply, sewage disposal, artificial lighting, etc., which, until comparatively recent years, were to be found in large cities only.

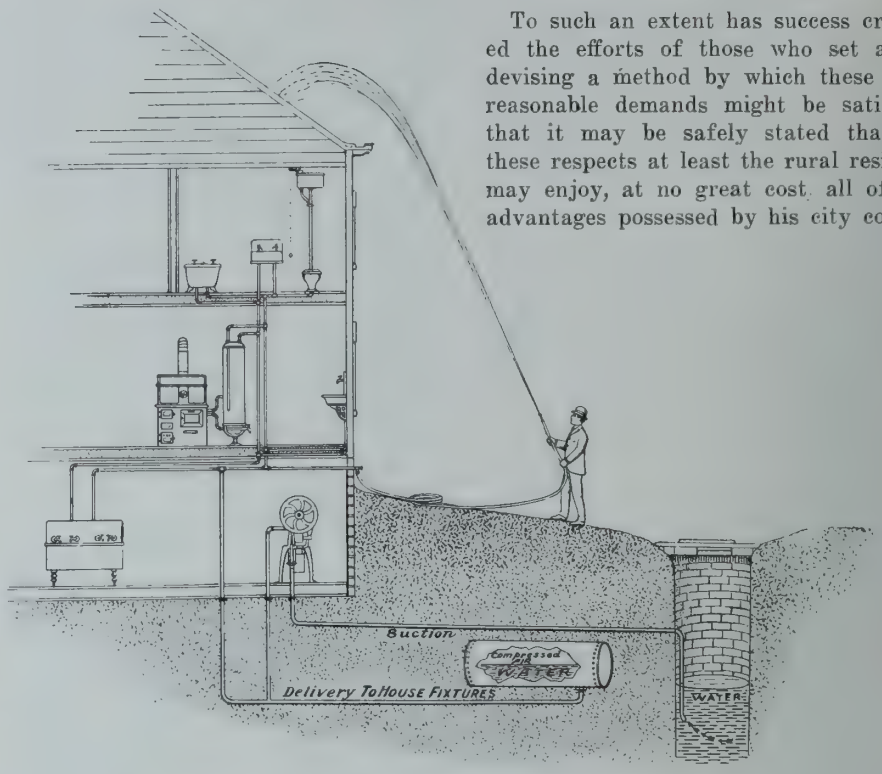


Fig. 2.

To such an extent has success crowned the efforts of those who set about devising a method by which these very reasonable demands might be satisfied that it may be safely stated that, in these respects at least the rural resident may enjoy, at no great cost, all of the advantages possessed by his city cousin

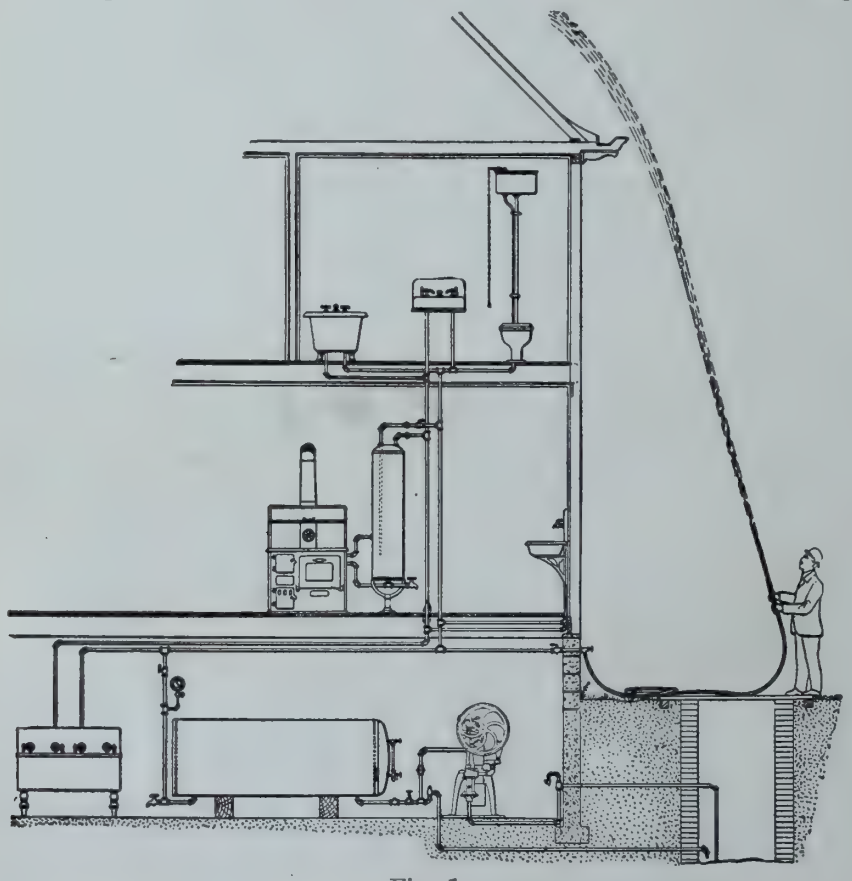


Fig. 1.

Until very recent years, where any attempt at all was made to introduce waterworks in a building, where a regular water service was not available, it was the practice to erect a reservoir in the top of either the house or barn or else in the tower of a windmill, or a tower built for the purpose.

This method, however, has many inherent disadvantages, among which are the absence of a reasonable pressure, the effect of the atmospheric temperature during both winter and summer, the possibility—particularly where the tank was placed in the house or barn—of birds, bats, vermin, etc., being drowned and contaminating the supply, not to speak of the constant contact with dust bacteria and odors. Another important drawback was the liability to leakage and the consequent damage to plaster and decorations below. Then, again, special provision had to be made for carrying the sometimes enormous weight of water stored in large tanks.

All of these difficulties and disadvantages have been overcome by the use of what is known as the pneumatic water supply system, which is coming into general use in some sections of the coun-

try, and is meeting with splendid success.

In Fig. 1 is shown one of these systems installed in the basement of a house and connected to the water piping of the same. In this case a hot air engine

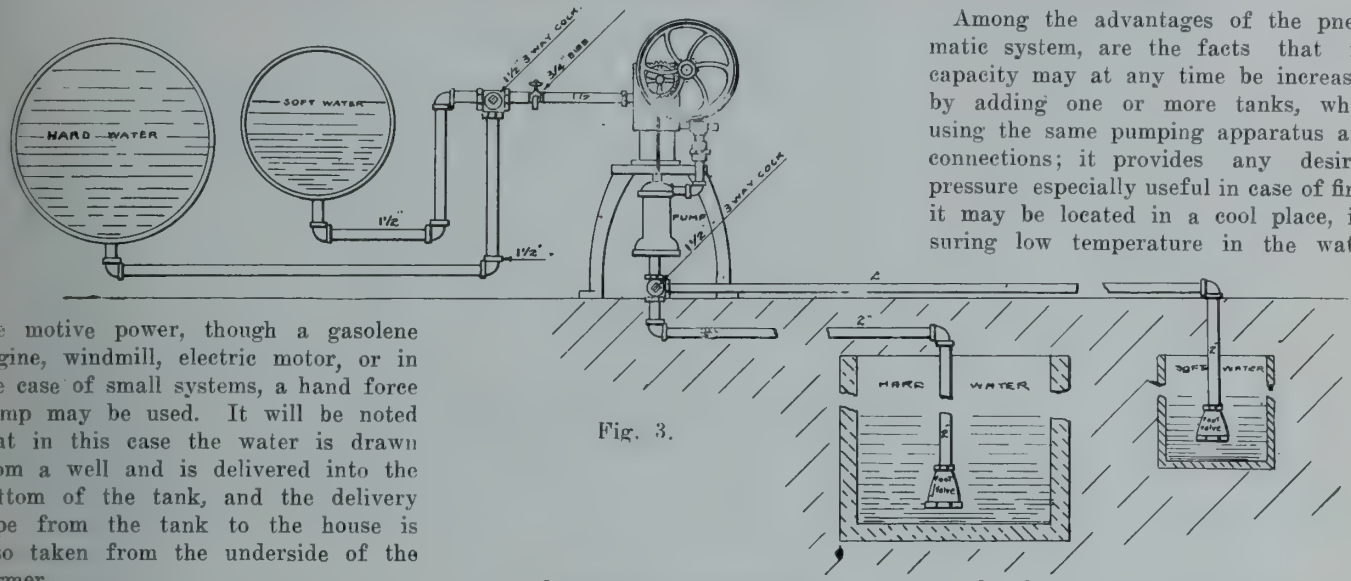


Fig. 3.

the motive power, though a gasolene engine, windmill, electric motor, or in the case of small systems, a hand force pump may be used. It will be noted that in this case the water is drawn from a well and is delivered into the bottom of the tank, and the delivery pipe from the tank to the house is also taken from the underside of the former.

The first essential of this system is that the tank shall be absolutely air-tight, and to that end tanks of all capacities ranging from 140 gallons to 18,000 gallons capacity made especially for the purpose, are procurable in Canada from National Equipment Company, Toronto.

The necessity for having an absolutely air-tight tank can scarcely be exaggerated, because the smallest leak of air will eventually result in destroying the usefulness of the whole system. For example, if a tank loses one hundred or even ten cubic inches of air per day, it will be only a matter of a short time until all of the imprisoned air has escaped, and consequently the water in the tank will not be forced out. It must be borne in mind that a tank that will be found water-tight or steam-tight, may not be air tight, for the same reason that a waste basket that would hold potatoes might not hold sand and an ordinary boiler-maker has not the facilities for building tanks of the class required, and the price at which they are sold would not warrant them in installing the necessary equipment.

Operation of the System.

The operation of the system is as follows: After the various connections are made, which include the connection of the suction pipe to the well, the delivery pipe from the pump to the tank and the connection between the tank and the house plumbing, the pump should be started and kept in operation until the required pressure, be it 30, 50, or 75 pounds, is obtained.

After obtaining the desired pressure on the gauge, it will be apparent that all of the air originally contained in the tank will be at the top and all of the water pumped into it will be at the bottom, and that the former will occupy a space decreasing in volume as the pressure increases, that is to say, the more water that is pumped into the tank the smaller will be the space into which the air will be crowded.

It will also be evident that when a faucet is opened at any of the plumbing fixtures, or to supply the hose outside, as illustrated, the compressed air will cause the expulsion of the water at a velocity depending upon the pressure registered on the gauge.

Among the advantages of the pneumatic system, are the facts that its capacity may at any time be increased by adding one or more tanks, while using the same pumping apparatus and connections; it provides any desired pressure especially useful in case of fire; it may be located in a cool place, insuring low temperature in the water supply, the water cannot be contaminated after it enters the tank, and the danger due to leakage is reduced to a minimum.

In Fig. 2 is shown a system in which the tank is buried in the earth with the object of keeping the water cooler than would be possible with it kept in the basement, or because there may not be room in the latter place, but such an arrangement in some soils would necessitate a careful protection of the tank or the results might be the more or less rapid deterioration of the metal. It will be noted that one pipe serves both to deliver water to the tank and to return it to the house, and it will be clear that this will do equally as well as two pipes, as shown in Fig. 1.

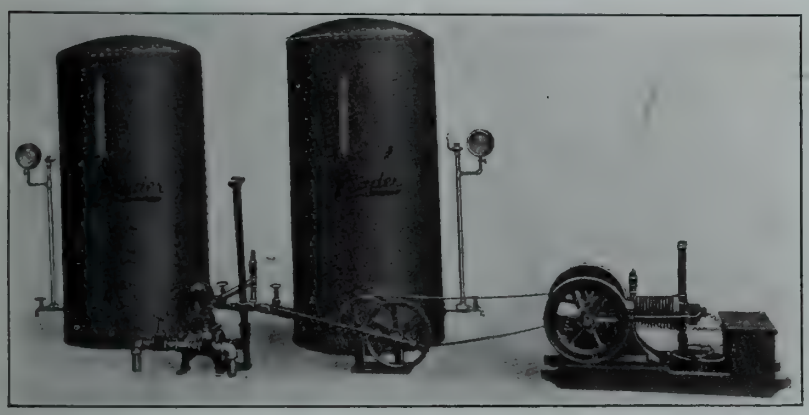


Fig. 4.

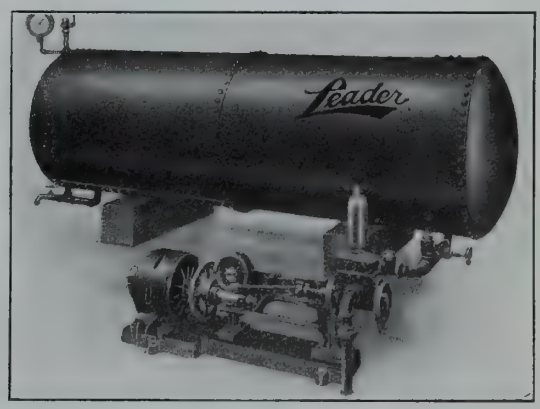


Fig. 5.

In Fig. 3 is shown an arrangement by means of which a soft water and hard water tank may be filled alternately with the one pumping apparatus. By this arrangement of pipe lines it is only

necessary to turn in the proper direction the two three-way cocks indicated in the diagram.

In Fig. 4 is shown a duplicate water system for hard and soft water operated by a small gasolene engine connected by a pump to an ordinary hand-force pump, which may be manually operated should necessity at any time require it.

This outfit, together with that shown in Fig. 5, which is an electrically operated plant, has proven very popular because of the comparatively low price and their high efficiency. In the latter case the motor may be connected at a very moderate cost with an automatic controller which will start and stop the pump as the pressure in the tank fluctuates so that a constant pressure is maintained without any attention on the part of the owner, except to occasionally oil the apparatus.

Aside from the economical features of the arrangement briefly described in this article, the simplicity of such a system and the many other features in its favor, including that vitally important one in country districts, viz., fire protection, should commend it to every comfort-loving and up-to-date suburbanite and master plumbers can augment their income materially by interesting well-to-do country residents in this class of water systems.

Sewage Disposal by Means of Septic Tanks

Operation of a Septic System Briefly Described by the Engineering Review, New York.

The correct method of the final disposal of sewage from dwellings is a most important question, and this branch of engineering has made wonderful advancement within the past twenty years. There can be no doubt that the use of the cesspool is a constant source of danger from contamination of the water supply, even though this contamination may not occur immediately but after many years.

Among the various methods utilized by the sanitary engineer for the final disposal of sewage, the septic tank system

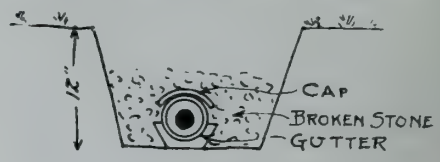


Fig. 2.—3-inch Tile in Trench.

plays a prominent part. The theory of this method of sewage is as follows:

The sewage from the house enters a receiving basin where it has a period of rest of about three days. During this time fermentation takes place, breaking up the albuminoid bodies which throw off various gases and allowing at the same time the precipitation of the heavy inorganic bodies, which settle to the bottom. From the receiving basin the sewage flows to the discharging basin. Here fermentation is carried further with a final slight precipitation. When the sewage in the discharging basin reaches a certain determined height, the seal of

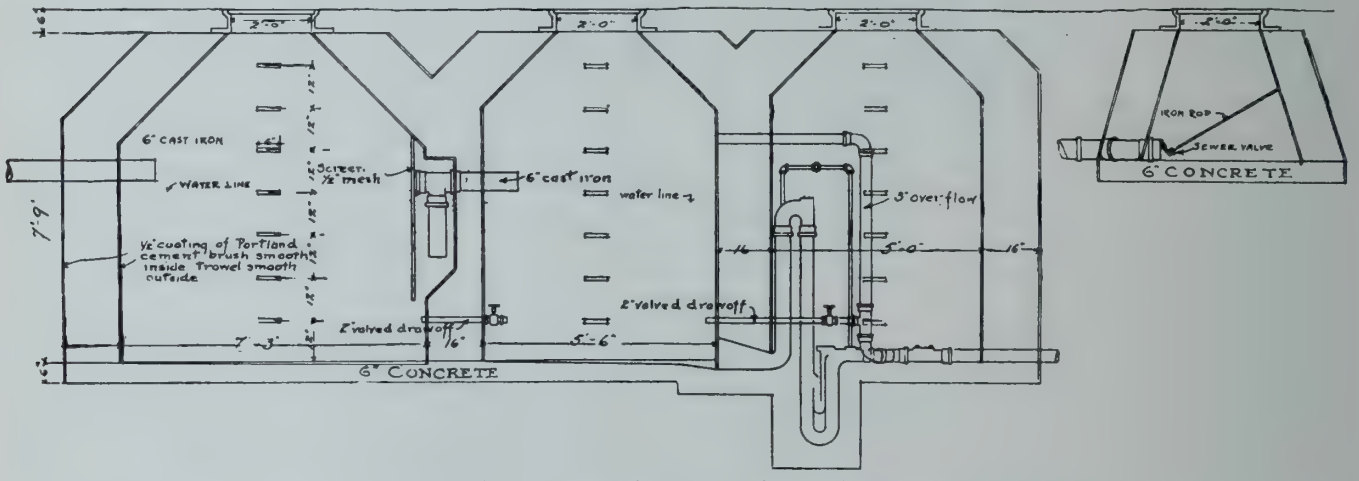


Fig. 1.—Details of Receiving and Discharging Basins.

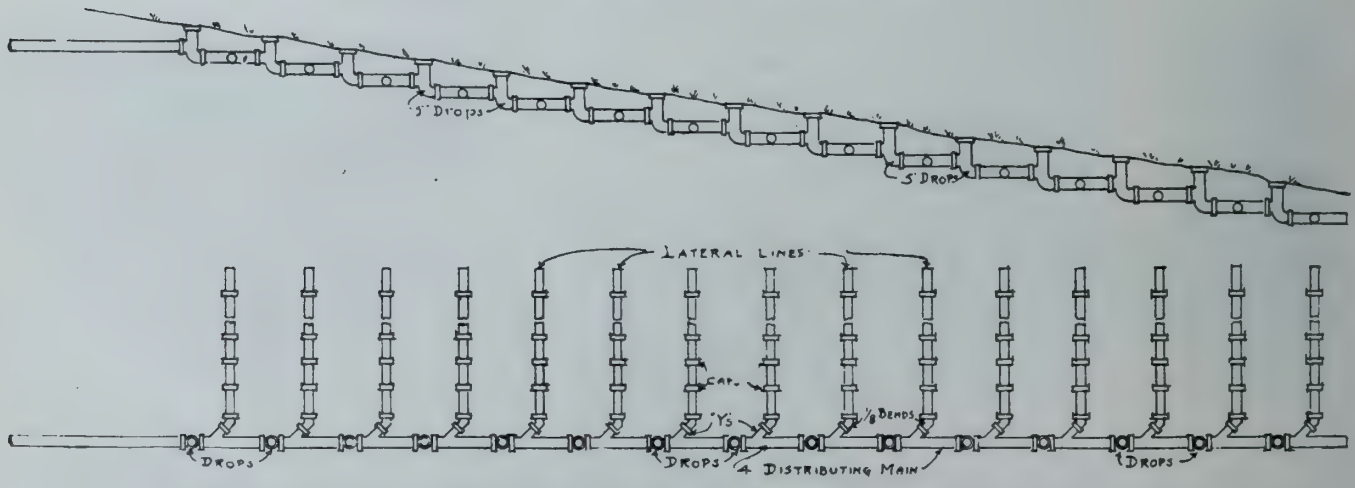


Fig. 3.—Detail of Disposal Fields Showing Distributing Mains, "Y" Branches, Lateral Lines and Drops.

a siphon is broken and the entire contents are delivered to a disposal field through a 4-inch main distributor and from this it flows into a number of 3-inch lateral drainage tile branches. From these branches the sewage enters trenches through the open joints of the pipes, where it comes in contact with the oxygen, held in the interstices of the broken stone, which attacks the sewage, throwing off hydrogen, nitrogen and other gases. The drainage lines bein laid but twelve inches deep, the roots of the growing vegetation absorb the nitrogen, which accounts for the rank growth over the field.

The question of sewage disposal by this method depends upon the character of the soil of the disposal field, the distance from the house, the number of persons living in the house and many other points which can only be decided by the engineer.

In Fig. 1 is shown details of a receiving and discharging basin, with the adjoining siphon basin and its siphon as usually installed.

A good method of constructing the basins is of field stone laid in Portland cement. The bottoms of the basins should be composed of concrete laid to drain to one point. The basins should also be so arranged that they can be drawn off one into the other.

The mouth of the siphon is set in a small sump, built into the bottom of the discharging basin, so that when the siphon operates the entire contents of this basin are carried off.

In the siphon basin there should also be provided an overflow and valved draw-off and a clean-out.

For the pipe work in the basins, extra heavy tar-coated cast-iron pipe may be employed.

sist of 3-inch drain tile, laid about 10 or 12 inches below the surface of the ground, as shown in Fig. 2.

The tile is surrounded with about 6 inches of broken field stone. The tiles should be laid about a quarter of an inch apart and the lateral lines should not exceed 90 feet in length.

The manner of disposing of the sewage by means of special "drops" is shown in Fig. 3. By the use of these "drops" the sewage flows with but the

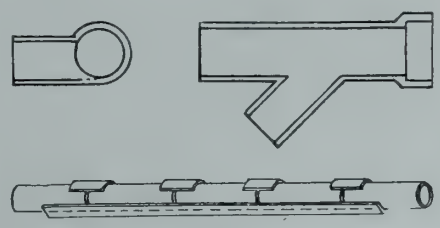


Fig. 4.—Drain Tile and Branches.

slightest fall. The drops are of vitrified pipe, made in one piece, and have hub and spigot ends. Special drainage branches are placed between the drops. These branches are also of vitrified pipe and are made "right" and "left," as the invert of the 3-inch branch is on the same level as the invert of the pipe itself.

A detail of these special Y branches is shown in Fig. 4.

From the end of the 3-inch drainage Y branches is laid the 3-inch drainage tile, as shown in Fig. 5. This tile is the ordinary absorbent drain tile, is not vitrified, has no hub or spigot and comes in 1-foot lengths. It is laid on gutters of the same material, which act as a bed upon which the tile rests, and which allows the tile to be laid with much more care than if it were simply laid upon the ground. The gutters also serve to hold the tile in place, when the tile trench is being back filled, and act as a permanent bed, so that the tiles at any future time may be removed for cleaning and relaid in their original position and grade. Over the point where two tiles meet is placed a cap of the sam material. This is to prevent the entrance of earth, stones, etc., into the tile wher the trench is refilled.

STAR IRON COMPANY EXPANDS.

The Star Iron Company, Montreal, are contemplating extensive development to their plant and scope of operations. Official authority has been received to increase the capital from $60,000 to $200,000, and plans are under consideration for the building of a new factory on a more extensive scale. The company have bought the stock and patterns of the Canada Radiator Co., and propose to manufacture radiators extensively in the near future.

L. A. Payette, recently sales manager for Warden, King, Montreal, has been appointed sales manager of the company J. J. Bouchard, who has been hitherto attending to the sales department being now secretary-treasurer of the company.

It is interesting to note, showing how outside capital is being invested in Canadian concerns, that French investors are subscribing some of the new capital of the Star Iron Company.

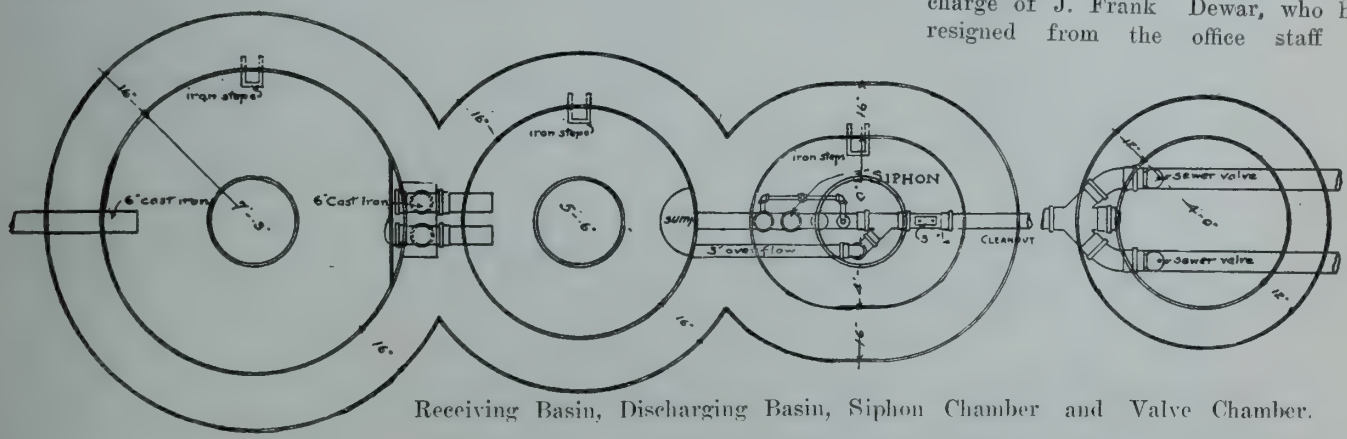
MAY LOCATE AT TORONTO.

The Anderson Porcelain Company, East Liverpool, Ohio, manufacturers of enamelware, are talking of locating a Canadian plant at Toronto.

MOTT COMPANY IN TORONTO.

The J. L. Mott Iron Works, New York, who, for several years, have been represented in Canada by W. J. Wall 83 Bleury St., Montreal, have decided to open a branch office in Toronto in charge of J. Frank Dewar, who has resigned from the office staff of Somerville Company, Toronto, to accept the appointment.

The Mott Company make a specialty of high-grade enamelware for public comfort stations, etc., and also manufacture radiators and heating goods.



Receiving Basin, Discharging Basin, Siphon Chamber and Valve Chamber.

By the action of the siphon the sewage from the discharging basin is led into a 4-inch vitrified main discharge pipe which terminates in the main distributor.

The disposal field should not be located too near the house, and should con-

Plumbing and Heating in Country Homes

Splendid Equipment in a Western Ontario Farm Home Described by "Salesman."

The Rittenhouse Public School, near St. Catharines, was recently mentioned as a modern country schoolhouse. It might be said that the schoolhouse and its appointments is an example of what Ontario farming communities are coming to.

The fact that a greater interest is being shown in farm life, opens a new field for the plumbing and heating trade and in some sections a good trade has already been worked up. With the advent of rural phones and delivery, the improvements in, and the low cost of both plumbing and heating goods, there is no reason why the farmer should not be as comfortable as his city cousin.

Some advertising directed along this line to the farmer would be productive of good results, as when one satisfactory job is installed in a section, more follow, as the farmer himself is a good advertiser of anything that suits him. One hot water and plumbing contract installed in the fall of 1907, was the means of selling four others within a distance of ten miles.

The writer had the pleasure of visiting a country home about ten miles from one of our western towns, and as far as conveniences are concerned, was surprised to find it as complete, if not more so, than the average city house.

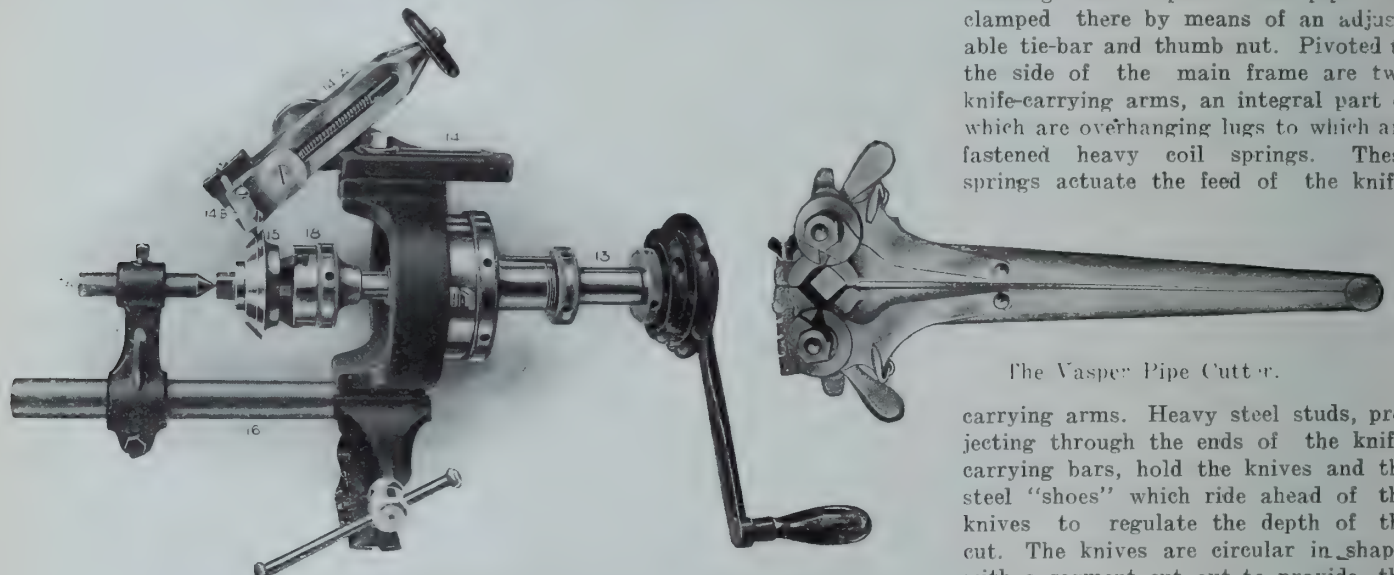
For water supply, tank was placed in the attic, into which the rain water from the roof was directed, and when that supply was not sufficient, the wind mill was brought into use. A pump in the kitchen sink was attached to the hard water well. The kitchen range had a waterfront and was connected to a 30-gallon range boiler supplied by the soft water tank in the attic. The bath room was connected to a septic tank and consisted of the regular three pieces, while on the ground floor was the sink and basin.

Neither the boiler nor the radiation was skimped in the hot water heating system. A radiator was placed in each room and a thermometer on the dining-room radiator. The house was exposed on all sides and the required amount of radiation was installed, as a test was made that showed an even temperature all over the house. Regulating chains were connected to the draft dampers on the boiler and saved many a run to the basement.

Many Labor-saving Devices.

Something unusual, and what we can hardly expect to be put in general use was the electric light plant. A gasolene engine was connected to a dynamo, and generated electricity for the house lighting. The plant was in a workshop some distance from the house. When starting, it was necessary to go to the engine, but was so arranged that it could be shut down from the house. The plant would be too mechanical for the average man to attend, but goes to prove to what extent the desire for comfort is taking hold of our country. The engine had more duties than generating electricity, as quite a complete workshop was supplied with motive power.

While it would probably be impossible to find another such country home in Canada as the one I have described, yet it goes to prove what can and will be done in the future. The farmer has the inclination for home as well as farm improvements, and now is the time for the master plumber to direct his attention to what he has to sell. The implement manufacturers have found the Ontario farmers quick to respond to any offer to better their farm, and the heating and plumbing trade will find them equally responsive to a betterment in the home.



Disc Cutting Machine in Use on a Taper Disc.

THE "VASPER" PIPE CUTTER.

In this cutter, which has a capacity of from ⅛ in. to 2 in. pipe, the bevel cutting wheels are supplanted by cutting tools that make the action of the implement the same as that of a lathe or power-driven cutter. The action is, therefore, very rapid, and there is no burr either on the inside or the outside of the pipe after it has been cut. The action also allows the cutting of thin washers from pipes.

The main frame of the tool consists of two arms hinged at the handle end and terminating at the other end in V-shaped bearings. The frame opens on its hinge and is put on the pipe and clamped there by means of an adjustable tie-bar and thumb nut. Pivoted to the side of the main frame are two knife-carrying arms, an integral part of which are overhanging lugs to which are fastened heavy coil springs. These springs actuate the feed of the knife-carrying arms. Heavy steel studs, projecting through the ends of the knife-carrying bars, hold the knives and the steel "shoes" which ride ahead of the knives to regulate the depth of the cut. The knives are circular in shape, with a segment cut out to provide the cutting edge. Eccentric levers pivoted on the knife-carrying arms enable the operator to overcome the spring tension and draw the arms so the knives or cutters will clear the pipe when placing the pipe in position. After the tool is fastened in the desired position the eccentric levers are turned over, allowing the cutters to rest on the pipe. The springs automatically feed the cutters until the pipe is cut off. The cutters may be successively reground around three-quarters of their periphery.

The Vasper Pipe Cutter.

The "Vasper" pipe cutter, which can be used equally as well on lead pipe, brass tubing is manufactured by Macdonald & Sons, 128 Craig Street West, Montreal.

Design of House Heating Apparatus

An Analysis of the Shortcomings of the Present Day House Heater Outlined by the Engineering Record—Design of Fire Boxes and Grates —Use of Soft Coal.

Despite the many million of tons of coal annually used for purposes of domestic heating it is an unfortunate fact that much of the apparatus in which this huge quantity is burned is rather crude and inefficient. For a rough guess at least a quarter of the fuel escapes unburned—that is, about this proportion of the total thermal value of the fuel is recoverable in the ashes. Of the rest only a moderate amount is actually utilized for the purposes intended. Benjamin Franklin made a long step forward when he introduced his famous stove in lieu of the terrible wasteful fireplaces of his day, but there is still room for other Franklins in the design offices of manufacturers of the cheap heating apparatus. Now, considering the success that has attended the careful study of conditions in ordinary steam generation and the merits of high grade house heating apparatus, one can safely say that the wastes in domestic heating can be very largely reduced, and in the interest of the householder, and of the coal supply as well, effective improvements in ordinary apparatus ought to be put in practice. Obviously the conditions of heat utilization in domestic apparatus are quite similar to those found in general, yet the differences are significant and worthy of study.

Perhaps the most conspicuous difference is the primary requirement in domestic heating that the apparatus shall run continuously with a minimum of attention. This implied condition of infrequent firing seems to be the chief stumbling block in furnace (firebox) design. An ordinary boiler used in a power plant is planned with reference to steady firing, with reserve capacity for forcing if necessary. A domestic furnace of whatever kind must be able to work efficiently when running practically banked for hours at a time, and still must have capacity for forcing without continuous attention. It must have more reserve capacity than the boilers in an electric light plant, with the special additional requirement of very economical working at light loads. It is in operation, say, 3,000 to 4,000 hours per year in the climate of the northern United States, and during 80 per cent. of this time it is running perhaps at only two or three tenths of its full required capacity, which must nevertheless be reached without the necessity of frequent attention. It should be able to burn efficiently as low as 5 lb. of small size coal per hour, as well as half a dozen times this amount at a pinch of extreme cold. Clearly, the problem is not as easy as it looks at first glance, and one cannot altogether wonder at the bad results often obtained. The call for full capacity without regular attention at short intervals is probably the most troublesome condition to meet, since it hinders the employment of the small grate surface that would otherwise be desirable. To burn a considerable amount of fuel with very low draft implies a large grate surface, which is extremely troublesome when trying to burn a small amount economically. To avoid this trouble has proved very difficult, and the commonest method of dodging around it by using two independent furnaces is often very unsatisfactory in its results. With two hot air furnaces it is no easy task to deliver heat uniformly to all the flues while using only one, and the other alternative requires a duplication of flues that is most objectionable. In fact, all the duplex schemes are troublesome unless one is working on a scale larger than is usual in residence heating.

Indirect Steam and Hot Water Heating.

Indirect heating, whether from hot water or steam, is difficult on a small scale. When the system is large enough to justify the distribution of air from a power blower, all can be made to go well. In small plants, however, where one has to depend on natural draft, the result is apt to be very unequal heating and a most exasperating degree of dependence upon wind and weather. The trouble from the very variable draft of a low chimney, too, is ever present, whatever the form of the heating. Hot water heating, very desirable on account of its thermal stability due to the great heat capacity of the water, is difficult to force and steam is hard to run low, so fate catches one coming and going. The heating surfaces, too, in domestic steam and hot water equipments are generally rather hard to get at for cleaning, so that they are commonly much less effective than they ought to be.

The whole problem, whatever the particular method of distributing the heat, therefore turns upon proper firebox design. Incidentally this should take into account the economic use of cheap fuel. At present the common fuel is anthracite, the price of which has steadily risen until to-day it is nearly double that of good steam coal of nearly equivalent thermal value. With a properly designed furnace, steam coal can be made to give good results in our domestic heating. It requires, to be sure, somewhat different management from anthracite, but it is a fuel entirely suitable for domestic use provided the apparatus is built for it, and handled accordingly. Both furnace flues and chimney must be susceptible of reasonably easy cleaning, and there must be a material difference in the design of both the grate and the firebox.

Burning Soft Coal.

Yet why should one not burn coal at $3 or $3.50 a ton instead of at $6 to $7 a ton? The difference in thermal value is hardly more than 10 per cent. and the efficiency of utilization ought to be quite as great in one case as the other. In fact, the soft coal would probably show less combustible mixed with the ashes than the anthracite. In some parts of the country the soft coal is already freely used and the experiments on smokeless combustion at the University of Illinois demonstrated that such fuel could be burned, even for domestic purposes, with little or no smoke. In order to gain this advantage the firebox design has to be modified, but to no extraordinary extent, so that there is no good reason why it should not be done and cheap fuel brought extensively into service. Most of the world, in fact, gets along very comfortably without anthracite.

Grates and Other Details.

This main question of improvement then resolves itself into better design of the furnace proper, so as to fit it for more reliable and economical working over a wide range of output, and with much greater facility in the use of cheap fuel than is now common. Of minor inconveniences which might be easily remedied there are many. For instance very few domestic furnaces are so arranged that one can easily and effectively use a slicing bar which is frequently very desirable. Again, there are forms of rocking grates in which a bit of hard clinker the size of a walnut can so lodge as to put the furnace out of business until the fire is dumped and the obstruction removed. In others there is no stop provided for the rocker arm, so that the least lack of caution lands most of the fire in the ashpit. These are, perhaps, cheerless reflections of the impending winter, which nevertheless show a real need of active skill in improving the heating of the domiciles in which humanity lives. Those who live in steam heated flats put on superior smiles—but let them wait until the all-powerful janitor gets drunk and lets the fire go out with the temperature at zero. Then will even they join in the call for better planned domestic heating apparatus.

Modern Management of a Plumbing Business

(Written for Plumber and Steamfitter by J. F. Brady.)

To insure a successful business, one must have successful business methods, and in this advanced day when plumbing construction is receiving more attention than it ever did before from all quarters of the country, so should our office records be looked to, and wherever we find something lacking to a concise and accurate statement of the data, cut it out and provide that which will give the information instantly.

Large plumbing houses, generally speaking, have already adopted up-to-date indexes and records of their business items; had they not made these provisions it is safe to say their houses would not to-day be as sound as the are.

It is, therefore, more for the smalle plumber I shall try to give a few ideas as to how to probably improve his business, especially in estimating, the foundation of a successful business house—and if you are successful in your estimating this certainly means more business—and if you get more business and make a profit, even though you work on a small scale of profits, and you put this profit to the right use, your house must grow.

Guess-work is Not Business.

When a man asks you to bid on a job for him don't guess at what it will amount to, but spend a few hours going over it carefully. A man will never succeed if he goes at a thing half-heartedly. It is better to spend some time intelligently figuring up a number of contract estimates and win only, say, one out of a number of bids and make some money on this one, rather than "thinking" a job is worth so much, get it and lose—putting your good money into the pocket of the other man.

Don't you think you would find it a good plan to jot down on a special size card (so that they may all be filed in the same case), the number of fixtures, fittings, etc., etc., which you calculate it will take to do this particular work; add the cost of this material to the estimated labor expense necessary and then put in your percentage of profit? This would be an intelligent record of your bid, and if you lose the contract, why probably you're better off, because if you have done your estimating intelligently, and are paying the same for material, as the other man, which should be the case, your successful competitor must surely lose instead of make on the job.

Don't Wait for Plums to Drop.

Of course there are two important factors to be taken into consideration; namely, calculate your material and labor carefully, and don't aim to make too large a percentage of profit. Some master plumbers believe that if you have one large job and make a good profit on it, it would be better than a small percentage on a number of smaller contracts. This may be true, but don't forget to include the time lost in waiting for the award of the "big plum."

Now let us suppose you receive the award of a job, figured by the card system mentioned. Whenever you send any material to the place, jot the nature and amount down in the proper column and each day have your clerk transfer it to this "contract card," the labor record sent in by the foreman. Your foreman could report on his blank the amount of material used from time to time as the work progresses and in this way, when the job is finished you have a complete record of what you estimated the work would require, what the job actually used, and just how much money you made.

The items of expense, such as office rent, clerk hire, and material for the office, etc., must, of course, be taken into consideration when calculating your net profits for the year or any special time, but this must be assessed against all the work done.

Credit Your Best Asset.

Credit with your supply house is one of your best business assets, but good credit can only be obtained by being prompt with your promised payments on your material. When you get your money on your contracts, if your bill from the supply house is not due, place the pro rata amount of the contract material in bank and leave it there to be used only for the purpose of helping out on the supply bill when due.

In this way you will build up a business with a solid foundation, one which has behind it honest principles, good work which carries with it a strong guarantee to the customer, and on which work you rarely have to go back and which slowly but surely brings you before the public as being a house upon which dependence can be placed for straight, honest work, and in this manner the old maxim "the customer is the best advertisement" is most strongly demonstrated.

Of course, some may argue I am wrong for competition is so sharp, and where there are no plumbing laws or inspection of plumbing work, a man can do a great many things, in order to get a job, he wouldn't do if he does his work conscientiously. For instance, material could be bought from mail order houses by the owner, and installed and connected by the plumber—there are many plumbers who do this sort of work, much to the detriment of not only themselves, but to the entire plumbing business, for it is encouraging the sale of plumbing goods by these mail order houses, who do not look to the sanitary construction of the goods they place on the market, but who are simply out for the money which they can entice from the people throughout the country who think they are getting ahead of the local supply houses who are most probably handling solid goods

Use Good Materials.

The cheap construction of the materials which go to make up the water closets, lavatories, sinks, and every other plumbing fixture sold by these houses, soon shows up with a little wear and then the buyer finds out that the job has cost him more money because he must replace the goods with a better class, than if he had put in the best quality at first. The plumber is hurt because he didn't advise the purchaser of his error, and therefore gets no more business from that man.

And so it will go on unless some good business stand is taken by the plumbers now—unless the keeping of the office data is improved and placed on a good footing so that you know just what is what—and by the master plumbers in the different localities getting together and declaring that they will stand up for only the best work being done—the better quality of material being used and by honest dealings throughout. And above all, by discouraging the trade with houses which sell plumbing goods without the makers' name and a guarantee behind them.

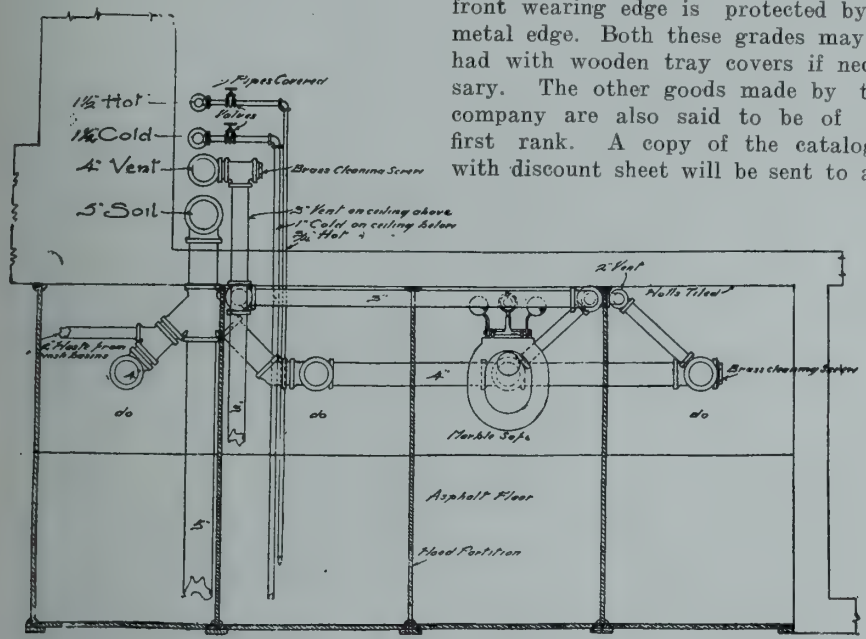
The standardizing of plumbing goods is a most important step in the right direction and with the co-operation of the many sanitary societies which are now working to attain this end we may expect something good in the very near future.

BRASS PLANT FOR SALE.

The plant of the Mann Brass Works, London, is being offered for sale, the outfit consisting of the patterns, tools and machinery. The London & Western Trust Co., London, are the sellers.

CEMENT LAUNDRY EQUIPMENT.

Keen competition in the manufacture of sanitary and lasting laundry, kitchen and toilet equipment has led to the use of cement for making laundry tubs. The Imperial Granite Co., Toronto, in their 1909 catalogue, just issued, illustrate and describe a portion of their products. The company manufacture laundry tubs, sinks, feeding troughs, etc., of cement. The laundry tubs are in two grades, and are branded the "Crown" and the "Empire." The former is constructed on new and scientific lines, the entire top wearing edges being protected by a metal edge in one solid piece. The surface of the tub is perfectly smooth with a white enamel finish. The "Empire" is a little less ornate and is finished with a "Crown" surface, the outside being colored in either mottled blue or terra cotta. The front wearing edge is protected by a metal edge. Both these grades may be had with wooden tray covers if necessary. The other goods made by this company are also said to be of the first rank. A copy of the catalogue with discount sheet will be sent to any reader of the Plumber and Steamfitter on request.



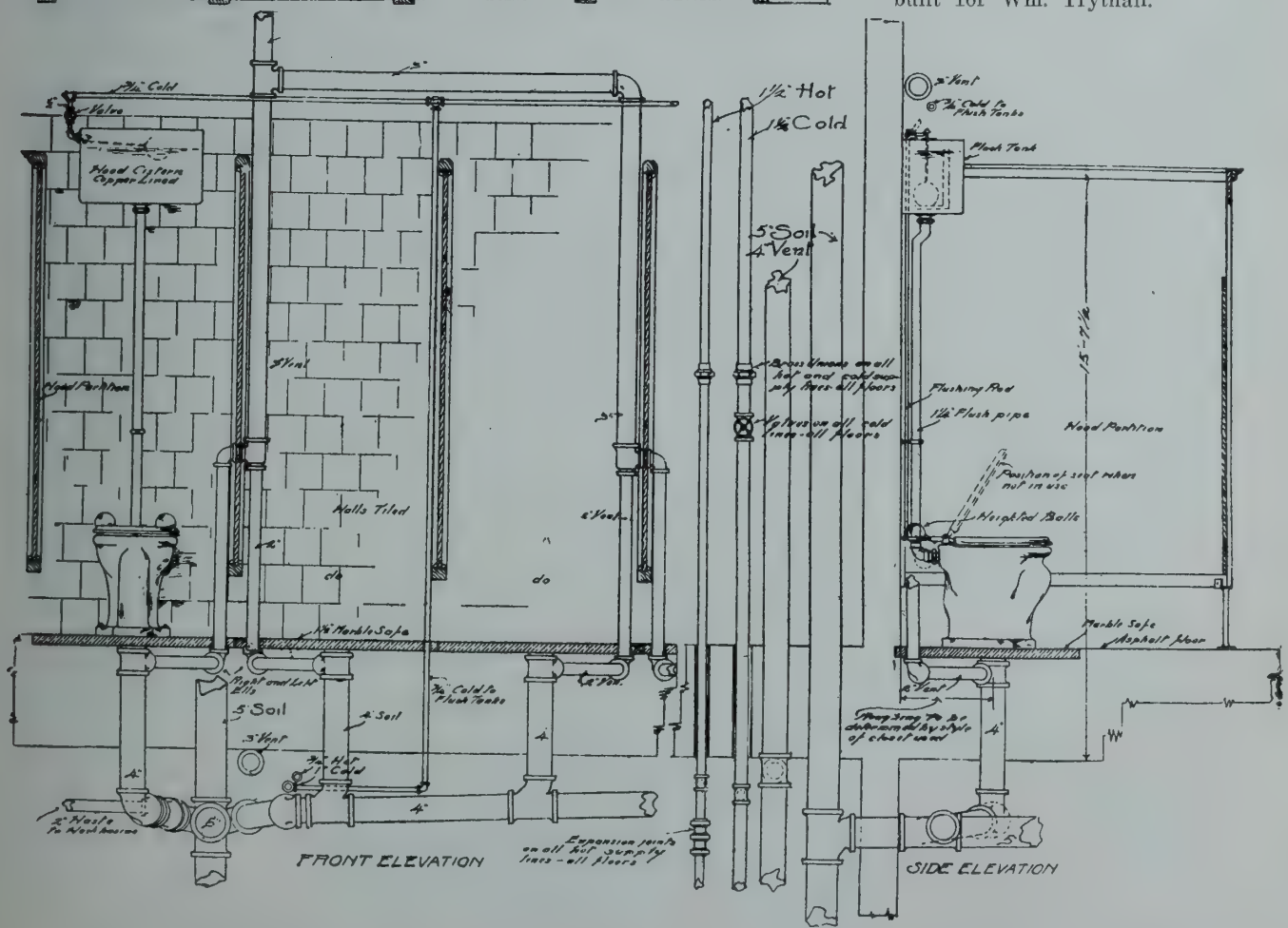
REVISING WINNIPEG'S BY-LAWS.

H. E. Plaxton, acting secretary for the master plumbers of Winnipeg, has received notice from the city clerk's office that two representatives from the Master Plumbers' Association are requested to meet in committee with the public works officers to discuss the present plumbing by-laws. Two representatives from the public health department and two from the Sanitary Association, will also meet in this committee. It is expected that the revision of the by-laws undertaken a few weeks ago will be completed at this session.

PLUMBING IN NEW YORK SCHOOLS.

The accompanying detail of closets designed for use in the public schools of New York are reproduced from the Engineering Review, New York. The detail is interesting in showing the most up-to-date lay-out of this class of work.

E. Stanley Mitton, Vancouver, has prepared plans for a residence to be built for Wm. Trythall.



Detail of Pupils' Closets, Designed by the Sanitary Department New York City Board of Education.

NEWS OF THE TRADE IN CANADA

Moses Greenberg, plumber, Montreal has assigned.

Riendeau & Soly, plumbers, Montreal have dissolved.

E. Lesperance, Montreal, has the contract for the Pratt estate.

Jno. R. Thompson & Co., electricians, Montreal, have been registered.

O. A. Cloutier & Co., plumbers, Victoriaville, Que., have been registered.

Duranleau & Belisle, plumbers, St. Louis (Montreal) have been registered

The Winnipeg plumbers' union has lost its appeal in the case of Cotter vs. Osborne.

B. J. Miller, plumber, Toronto, sustained some loss by a recent fire in his premises.

A curator has been appointed for the plumbing business of Moses Greenberg, Montreal.

A. A. Portugais, plumber, Rimouski Que., is erecting a $5,000 shop and dwelling.

The plumbing in the New York Life building at Montreal will be done by Ogilvie Bros.

O. J. Deegan, Port Arthur, has been calling on the supply houses at Toronto this week.

J. Colbert has the plumbing contract at $4,487 for the new Chambers St. school at Victoria.

The Federal Electric Co., Toronto, will do the wiring in the new Bonnick residence at that place.

G. E. Ellicott, master plumber, Hamilton, was a delegate to the Missionary Congress at Toronto this week.

Mitchell Bros., Chatham, have received the contract for the steam heating system for the new Princess Theatre there.

Jack Marshall, of Marshall & Syme Port Arthur, was one of the participants in the recent bowling tournament at Hamilton.

The Toronto Public Library Board have awarded to Keith & Fitzsimmons at $162, the tender for lighting and steamfitting.

The Kingston waterworks committee awarded the contract for the supply of pump valves to McKelvey & Birch at 88c per pound.

Hunter & Harold, Kingston, have the plumbing and tinsmithing contract for the new observatory building at Queen's University, that city.

According to a Chatham correspondent, the plumbing trade is coming up pretty well, and everything points to a good spring business.

P. N. Sevigny has the plumbing, heating and roofing contract in a block of stores and dwellings being erected at Montreal for Jos. Sawyer.

Warden, King, Limited, Montreal, are now manufacturing radiators at their factory at Maisonneuve, having erected a fine plant for the purpose.

James Ballantyne, Montreal has the plumbing contract in the Duncan apartment house there. The Sayer Electric Co. will do the electric work.

The contract for valves has been awarded to E. G. Prior by the Victoria city council at the price of $1,263.05, the Crane valves are to be supplied.

W. J. Christie, manager of the Canadian Heating & Ventilating Co., Owen Sound, was a recent visitor in Toronto on his way to Winnipeg and Vancouver

Geo. M. Watt, of Watt & Sons, plumbing establishment, Chatham, underwent an operation for appendicitis recently He is reported to be progressing favorably.

W. Linton, Toronto, salesman for Standard Ideal goods, Port Hope, was elected school trustee for Scarboro recently. His term of office runs for three years.

Two hundred and fifty Buffalo plumbers are on strike. They demand an increase in wages from $3.50 to $4 a day, and the adoption of a number of shop rules.

Ald. Elliott, of Elliott Bros., Kingston hardware, plumbers and tinsmiths, was recently elected president of the Kingston Reform Association, by a unanimous vote.

Potticary & Dixon, plumbers, St. Thomas, have dissolved partnership. Mr. Potticary will carry on the business in the old stand, while Mr. Dixon has secured new quarters in the east end of that city.

Notice is given that the partnership subsisting between R. Hutchinson and J. Sturgeon plumbers, at Peterboro, under the name of the Hutchinson-Sturgeon Company, has been dissolved by mutual consent.

The Standard Sanitary Manufacturing Company, Pittsburg, expect to make a decision soon as to the location of their proposed Canadian plant. Toronto and Welland are the two places most likely to secure the industry.

Hamilton & Scott, St. Thomas, are installing a hot water heating system for J Hunt, of Glencoe. This makes the fifth plant this firm have installed in Glencoe. They have secured seven other contracts during the week.

A casual glance over the tenders for sewer pipe received by the Vancouver board of works shows that the prices submitted range from 20 to 25 per cent. higher than was paid by the city for the supply last year.

An automatic pressure reduction gauge for the reduction of the water pressure in buildings, has been placed on exhibition in J. T. Minnes & Co.'s plumbing store, Brantford. As it deals with a live issue, it is attracting a good deal of attention.

L. L. Anthes, of the Toronto Foundry Company, is preparing for his annual shooting expedition after Manitoba wild geese, and the close attention he is paying to the selection of firearms and target practice indicates that he is after the record bag of his party.

About fifty Niagara Falls citizens were in Welland recently to show cause why they should not be called upon to pay more money into the hands of the liquidator of the Niagara Falls Heating & Supply Co., through the stockholders receiving more shares than they paid for.

Wm. Patterson, Collingwood, Ont., has gone to Arcola, Sask., to take a position as a tinsmith and plumber for J. R. Mears. Mr. Patterson is a first-class mechanic, having worked seventeen years in the trade and served an apprenticeship of seven years in Scotland.

Edward W. Aikens, a young Toronto plumber, who was on his way with some household effects to make his home near Watson, Sask., was so badly crushed by falling between two railway cars at Kenora on April 3rd that he died shortly after being taken to the hospital at that place. The body will be taken to Toronto for interment.

Fewer Bros., plumbers, Woodstock N.B., are opening a branch store with a complete outfit of bath and plumbing goods at Edmundston. The firm has lately done much work at Clair Station, Andover, Perth and Grand Falls and has installed a heating plant and bath room in the residence of J. L. Cyr, of Edmundston, and will soon do extensive work in two of the hotels there.

Sheldon's, Ltd., Galt, have been successful in their tender for the heating of several railroad buildings in Cochrane City, Northern Ontario, to be erected by the Provincial Government. The Galt firm won out in competition with eighteen other firms. The present is the third contract recently received by Sheldon's from Northern Ontario, and as a result the firm is exceptionally busy

Representatives from the Winnipeg Sanitary Association, the Architects' Association, the Master Plumbers' Association and the Builders' Exchange will attend a meeting of the Winnipeg Works Committee and the city engineer, when the question of amending and consolidating the by-laws would be gone into thoroughly. It is thought that in this way the work can be approached after a full discussion from various points of view.

SOMERVILLE BUSINESS SOLD.

A big surprise was sprung on the trade in Toronto on March 30 when it became known that the supply business conducted by Somerville, Limited at Richmond and Church Sts., Toronto had been sold to Pittsburg capitalist for a sum approximately $250,000, this including the stock, building and land but not including the brass plant on St Helens Ave.

Plumber and Steamfitter of March 1 forecasted a change in Toronto supply houses and visits to Toronto of representatives of the Standard Sanitary Manufacturing Company gave rise to rumors that this company would establish a Toronto branch but the announcement of the change came as a surprise to many.

About six weeks ago W. A. Porter resigned as manager of Somerville, Limited, he being succeeded by A. F Falls. Now Mr. Porter is back in charge representing the Pittsburg interests and as soon as stock-taking is completed Mr. Falls and President Fred Somerville will withdraw from the business.

Messrs. F. Torrance and A. Myler, leading members of the Standard Sanitary Manufacturing Company, visited Toronto in March, presumably to select a site for their new Canadian enamelware plant, but during their visit also made arrangements for the transfer of the Somerville business. They have not yet made a decision about the location of the plant but it is understood that the choice now lies between Toronto and Welland, although Toronto's publicity commissioner has definitely announced that Toronto will get the plum. Welland may have advantages as a manufacturing location but Toronto is undoubtedly becoming a great centre for plumbing and heating industries.

Representatives of the Pittsburg concern are expected in Toronto about April 6 when it is expected that an announcement will be made regarding the location selected for the site of the new foundry.

In connection with the transfer of the Somerville business the Labatt Manufacturing Company's supply business at Toronto will in all likelihood be merged into the new business under Mr. Porter's management. At the time of writing stock-taking had been finished but the transfer had not been entirely completed. The Labatt Company's brass plant at London, which is being operated in a small way, will be sold and the Labatt Company will withdraw from the trade.

Somerville, Limited, will continue to operate the brass plant on St. Helens Ave., and the sale of the supply business will place ample funds at their disposal for the extension of their brass business. An addition of about 25x40 feet is now being made for the instalation of new furnaces which will enable them to double their output.

The brass company, according to Fred Somerville, will establish sample rooms and offices down town and if he decides to continue his connection with the company it will be in charge of the sales end at the new offices. Mr. Falls will retain his connection with the brass company as an auditor.

Mr. Somerville also states that Somerville, Limited, will continue to be represented in Montreal by Louis Payette and in Winnipeg by Stanley Brock. Changes will necessarily be made in the selling and office staffs of the two companies but announcement of these cannot be made until the next issue.

HEATING BUSINESS CHANGES.

For several months it has been known that changes would be made in the Warden, King and King Radiator Companies, the matter coming to a head on April 1 when the Warden King Company, who had been represented in Toronto by Cluff Bros., with warehouses at 21-27 Lombard St., announced their withdrawal from Toronto on account of the King Radiator Company, of which R. J. Cluff is managing director, having taken over the selling agency for Ontario of Daisy boilers. As the change works out the Warden, King, Limited, and Cluff Bros.' firm names are withdrawn and the King Radiator Company, in addition to their offices at the plant on St. Helens Ave., will continue the Lombard St. premises as a downtown office and display room for King radiators and Daisy and Viking boilers.

Under the new arrangement a larger stock will be carried at the plant and the upper floors of the Lombard St. warehouse will be rented, the display room on the ground floor being enlarged and moved to the front. W. J. Cluff will continue his connection with the downtown offices together with M. J. Quinn as consulting engineer. It is also planned to manufacture Daisy boilers at the Toronto plant in the near future.

John E. Costello, Toronto salesman, has been added to the office staff, and J. C. Wilson has been transferred to the city from the outside. Mr. Wilson's successor will be appointed this week.

The agencies for the Thomas air washing machines, Paul vacuum heating system, hot-air and gasolene engines, Peerless water supply tanks, and pumps for country residences, etc., held by Cluff Bros. have been taken over by a new concern to be known as National Equipment Co., Limited, with Cluff Bros. and M. J. Quinn as the chief shareholders and application for the charter will be made at once.

The changes centralize the business under one head and should result in many savings to the King Radiator Company and a better service to the trade.

SPECIALTY FOR PLUMBERS.

The H. L. Bowers Company, Port Hope, recently incorporated to manufacture building, foundry and sanitary supplies, will, it is understood, place upon the market a preparation for cleaning porcelain enamelware. The incorporators of the company were H. T. Bush, A. E. Pipher and H. L. Bowers.

STOP EXPORT OF NATURAL GAS.

The Provincial Gas Company, Welland, has received official notice from Ottawa that its permit to export natural gas, expiring March 31, would not be renewed, and the supply going to Buffalo was shut off on that date. One-third of the Buffalo supply went from Canada. The company has not yet decided what market it will seek for the gas which has been going to Buffalo.

ESCAPED FROM FIRE TWICE.

H. W. Anthes, president of the Toronto Foundry Company, who has been wintering in Florida with his wife and daughter, will return next week. He will bring back some good stories of adventure he and his party narrowly escaping with their lives from a burning hotel at Sea Breeze, Fla., early in the winter, and more recently escaping from another hotel fire at St. Augustine, this time being able to save their belongings.

DID LONDON'S MAYOR DO WRONG?

Ben Noble, of Noble and Rich, plumbers, London, made a statement in regard to the furnace matter at the new fire halls in that city. He said he was the contractor for the furnaces at the new fire halls, and that he had no dealings whatever with Mayor Stevely in the matter. "I tendered for the plumbing and heating. I had several tenders for furnaces and the Pease Company being the lowest, I gave them the contract. When they came I asked the company who would set them up. They sent word that their agents, William Stevely & Son, would do that. The furnaces were set up by Stevely's men. I had no conversation with Mayor Stevely regarding the price of the heating apparatus, but dealt directly with the firm. I never had anything to do with him at all, and all he did was set up the furnaces."

CONTRACTS AND BUSINESS OPPORTUNITIES

Municipal Undertakings.

Cobalt is to have a waterworks system.

London's proposed waterworks extensions will cost $50,000.

Owing to leakage, St. John wants to increase its water supply.

Arthur, Ont., is considering establishing a waterworks system.

Galt's waterworks commission has asked for $7,800 for improvements this year.

Medicine Hat Council have decided to ask the ratepayers to vote $55,000 for sewer purposes.

An arrangement has been entered into whereby South Vancouver will receive its water supply from Vancouver.

The Goderich Council has decided to submit a by-law to the ratepayers to issue $20,000 waterworks debentures.

Westmount (Montreal) citizens are crying out for filtered water and it is likely such a system will be installed.

It is proposed to install a gravity system of waterworks at Claresholm, Alta., at a cost estimated of $54,000.

A great many sewers will be constructed in the Deer Park district of Toronto, recently annexed to that city.

Tenders for the construction of a system of water works for Cote des Neiges West, Que., will be received until March 22.

The Toronto Board of Control decided to recommend the use of concrete with a lining of vitrified brick in the trunk sewer.

The ratepayers of Claresholm, Alta., will be asked to vote a sum of $70,000 for a waterworks system and electric light plant.

City Engineer Graydon of London will place in the estimates the sum of $5,000 for the building of a storm sewer in the east end.

The Winnipeg Board of Control have decided to take tenders for water works valves and hydrants to be used on the domestic water service.

The Godson Contracting Co., Toronto has the contract for constructing the first section (6,386 feet) of that city's trunk sewer, at $138,528.

Tenders will be received until April 1 for pipe-laying, water tower, cast iron pipe, and fire hydrants and valves for the town of Weyburn, Sask.

The Pembroke Waterworks Committee will secure plans for a new waterworks system and submit same to the council at the first meeting in May.

Tenders will be received until April 7, for pipe-laying, water tower, cast iron pipe, and fire hydrants and valves for the town of Weyburn, Sask.

The Halifax borrowing bill has been introduced before the N. S. Legislature. It provides for items including $50,000 for the construction of new sewers.

Tenders will be received until April 15, for the supplying of the various materials required in the extension of the new waterworks system at New Liskeard.

The Yorkton, Sask., council have adopted the report of the water and sewerage committee in favor of extending the system at an estimated cost of $50,000.

The Elk Creek Waterworks Co. are planning extensive improvements, including the laying of duplicate mains and the construction of a large reservoir at Chilliwack, B.C.

Tenders will be received until April 13 for all labor necessary for laying water mains and sewer pipes, and for furnishing certain materials required for the work at Edmonton.

At a recent meeting of the Vancouver Board of Works, the report of City Engineer Clement was adopted. The recommendations include the construction of sewers amounting to $6,950.

Application will be made to the Ontario provincial parliament to authorize the Etobicoke Township council to install a sewerage disposal plant for sanitary sewer and drainage purposes.

Dr. Arnyot, provincial analyst, says London must protect its water supply either by building cement walls around the collecting pond in Springbank Park or by closing the park to the public.

Tenders for Victoria's supply of 6-inch valves were as follows: W. S. Fraser & Co., $11.50 each; E. G. Prior & Co., $13.50; Crane Co., $15.00. The contract was awarded to Fraser & Co.

Tenders for the supply of cement to Victoria were as follows: R. P. Rithet & Co. $2.51½ per barrel; Robert Ward & Co., $2.65 per barrel; Bostock & Co., $2.51¼ per barrel. The contract was awarded to R. Rithet & Co.

At a meeting of the executive committee of the Northwest Winnipeg Ratepayers Association, it was decided to ask for the immediate construction of water mains on Selkirk, Pritchard, Manitoba and Magnus streets.

The Canadian Agency of London, England, has made an offer to the municipalities of South Vancouver, Point Grey, Richmond and Burnaby for the construction of a combined waterworks system through these districts.

It is estimated that $53,840 will be required by the Hamilton Waterworks Department for improvements, which include $25,975 for the beach pumphouse, $67,000 will be required for water works construction, this amount including $35,000 for extension of mains and $20,000 for new services.

The following contracts have been awarded for waterworks supplies for 1909 at Ottawa: Hydrants and valves, Thomas Lawson & Sons, Ottawa, $2,644; cast iron pipe, T. Sidney Kirby & Co., $15,065.10; lead pipe, McKinley & Northwood, $1,306.77; brass goods, James Robertson, Montreal, $987.95.

The time for receiving tenders for Fort Frances water works and sewer system has been extended until April 15. W. H. Elliott, Town Clerk of Fort Frances is taking tenders for labor and materials for waterworks and sewerage. The materials include cast iron pipes, special castings, gate valves, hydrants, vitrified tile pipe and manholes.

The St. Thomas City Council has decided to petition the Legislature for power to go into municipal heating by steam or hot water. The intention is to utilize the present light and power plant, which will not be used after Niagara power comes, to run this system of heating to the city schools, private buildings and residences. At present the City Hall and library are heated by exhaust steam from the works.

Chatham's source of natural gas supply will in all probability be further tapped in the near future, since an offer from the Volcanic Oil & Gas Co., to supply Windsor is now under consideration by the council of that city. This is the same company which supplies Chatham, and the price in the border city will be 30c a thousand for household purposes, 5c more than in Chatham. The fact that the gas is only slightly purified has caused considerable complaint at Chatham.

Winnipeg's city engineer has presented to the Board of Control his report on cost of constructing sewers. Combined intercepting sewers from Colony and Assiniboine Avenues to Red River north of city, including Cornish Street system, $1,225,000, or storm sewers in same section for dry weather flow only, $400,000. For combined intercepting sewers from Assiniboine River at Clifton Street to Red River north of city, including capacity of that portion of Ward 1, west of Cambridge Street, $3,077,080; sanitary sewers for same section for dry weather flow, $750,000.

General Building.

The Y.M.C.A. will erect a $40,000 building at Moose Jaw.

The Saskatoon Club will erect a $10,000 building some time this year.

H. N. Smith will erect at Toronto a row of dwellings to cost $30,000.

Angelo Calori is erecting a new $125,000 hotel building at Vancouver.

G. E. Case will erect four detached dwellings at Toronto, to cost $12,000.

Hawkins & Holt, Hamilton, will build a pair of brick stores.

Ex-Mayor Buscombe will erect a $20,000 warehouse at Vancouver.

A new hotel is being built at Outlook, Sask., for Bastedo & Cheney.

J. H. Johnson, Huntsville, Ont., will erect a residence at a cost of $3,500.

M. McLeod, Lockwood, Sask., will erect a large general store this spring.

Moore & Henry will erect a terrace of four residences at London for Arthur McClary.

The erection of a big apartment building will be started at Saskatoon at an early date.

The Bank of Montreal are stated to have plans for the erection of a branch office at Hamilton.

Emerson, Man., Oddfellows have purchased a site for the erection of a lodge room and two stores.

T. Baker, Prince Albert, has purchased property on which he will erect a large business block.

Eighteen Shatford, M.P.P., plans within a year to erect a four-storey business block at Victoria.

A site is being selected for the erection of a new hall for the Knights of Columbus at Winnipeg.

Thomas Smith has taken out a permit for a building to be erected at Ottawa at a cost of $12,000.

Daoust & Lafont, Three Rivers, have prepared plans for the erection of a residence for Mr. Jutreau.

Ald. Cooper, Hamilton, is negotiating for a site in the east end of that city, where he will erect six brick houses.

Leonard Foulds, Toronto, has prepared plans for a residence to be erected for Dr. Slade, at a cost of $4,500.

J. Stephenson, Hamilton, has been awarded a contract for the construction of two brick houses at a cost of $3,200

Arthur J. Bird, Vancouver, has prepared plans for a frame apartment house to be erected for Dr. W. A. Clark.

Ellis & Connery, Toronto, have prepared plans for a $3,000 residence to be erected at Meaford for Geo. Carnahan.

Fleming & Hamilton, Red Deer, Alta., will immediately erect a brick business block upon a site adjoining the post office.

Geo. T. Hyde, Montreal, has prepared plans for the erection of four houses at Westmount for Thomas Lamb.

Daoust & Lafont, Three Rivers, have prepared plans for the erection of a block of stores and residences for Mr. Balcer.

Tesse & Persse, large wholesalers, of Winnipeg, are contemplating the erection of a large business building at Edmonton.

Leonard Foulds, Toronto, has prepared plans for a residence to be erected at Bridgeburg for John Jones, at a cost of $2,500.

E. C. Wilson, Toronto, has prepared plans for a residence to be erected at Davisville, Ont., for Mr. Davis, at a cost of $4,000.

Three attached brick stores and dwellings will be erected on Queen St. east, Toronto, by Cecil Lee at a cost of $6,000.

The National Finance Company has taken out a permit for the erection of a business block at Vancouver at a cost of $30,000.

J. V. Bick, Toronto, has a permit for the erection of three brick stores and dwellings on Gerrard St. east. Estimated cost, $6,000.

E. Lamoureux, Montreal, has taken out a permit for the erection of two houses, containing six dwellings, at a cost of $8,000.

The Mason & Risch Piano Company have purchased property on Yonge St., Toronto upon which they will erect a large new building.

The I.O.O.F. Hall Association have purchased property at Toronto on which they will erect a new lodge building, to cost at least $60,000.

Mrs. Madigan, Port Credit, Ont., is reported to have sold a site of eight acres to a Toronto man who will build a large summer residence.

Henry Parock, manager of the London Concrete Machine Company, is erecting twenty dwelling houses in the eastern part of that city.

W. G. Hunt, Toronto, has completed plans for a two-storey apartment house to be erected at Ottawa for J. McMurchy, at a cost of $8,000.

J. Perrault, Montreal, has prepared plans for eight two-storey dwellings to be erected there for J. M. Derion. Estimated cost of buildings $18,000.

The Fathers of the Holy Ghost, who conduct an agricultural college on the old Alonzo Wright property, near Hull, purpose enlarging their institution.

Plans are being prepared for three business blocks to be erected in the vicinity of the city hall, Prince Albert, for D. Agnew, Andrew Holmes and G. W. Baker.

R. Montgomery Redden, Montreal, has prepared plans for the erection of three houses at Westmount, for W. H. Price. The contract has been let to T. C. Bulmer.

The Herkimer Baptist Congregation, Hamilton, is to build a new edifice The estimated cost of this structure is $20 000. Work on it will be started almost immediately.

J. E. Adamson, Montreal, has prepared plans for the erection of an apartment house for Chas. Shirley; and also for the erection of two houses at Westmount for Mr. Sharp.

Alphonse Piche, Montreal, has completed plans for the erection of two houses for Mr. H. Vallentine, and also has finished plans for the erection of two houses for T. A. Gauthier.

Public Buildings.

A new prison hospital is being built at Dorchester, N.B. penitentiary.

The Galt Free Methodists will shortly ask for tenders for the erection of a new church.

A new general hospital is expected to be built at Hamilton soon the present hospital being congested.

Gray & Campbell have been awarded the contract for the erection of the new Fernie, B.C., city hall.

J. Holman, Plattsville, Ont., has been awarded the contract of building the Bruce school, the contract price being $2,500.

A new central fire hall is to be erected at Calgary, also three small sub-stations. When these are completed, Calgary fire equipment and fire halls will be equal to that of any city on the continent.

Dr. Borden, of Mount Allison University, Sackville, N.B., has employed Burke & Horwood, of Toronto, to prepare plans and estimates for a four-storey stone building as an addition to the Ladies' College.

The officials of the Peterboro House of Providence are considering the erection of a new building for the Catholic poor. If assistance can be obtained from the city council a new building may be erected at a cost of from $30,000 to $35,000.

The Guelph board of education finding that there is a great need for technical education in that city, have appointed a committee to get estimates on the cost of the erection of a suitable building and equipment. They also talk of either erecting an additional four-roomed school building in St. James' Ward or enlarging the present one.

A number of large building contracts are looked for at Chatham this year. The city board of education has decided to proceed with the proposed addition to the Collegiate Institute. Wilson, Son & Arnold, architects, are drawing the plans, and the structure will cost between $15,000 and $20,000. The Dresden public school board is securing plans for a new school building. T. J. Rutley is architect for a new Presbyterian manse in Harwich. Wilson, Son & Arnold have the plans and are asking tenders for the new Howard township hall, to be built at Ridgetown.

PLUMBING AND HEATING MARKETS

MONTREAL.

March 31.—The near approach of the building season has created a decided stimulation in the majority of lines. Supply houses report most satisfactory business, not only locally, but in other centres of population and in the country. In fact, all the way round there is a strong development in buying. Building prospects improve as the time goes on, and contractors and plumbers are anticipating a steady flow of business. Soil pipe, the first to feel the spring movement, is going out splendidly, while lead pipe and solder are also in better request. Good business is also being done in enamelware, while the firmer tone to brass lines has stimulated sales. A large quantity of material is booked for Three Rivers.

The market is far from being settled as yet, so far as prices generally are concerned, although no important changes are announced locally. If prices in enamelware advance in the States, Canadian figures will probably follow. The sooner, however that quotations all the way round are steady, the better it will be for trade, as uncertainty as to the trend of prices tends to hold off buyers.

SOIL PIPE—There has been a strong stimulation in soil pipe, the spring movement being practically now on. Orders are coming in from all parts, and as soil pipe is a good indication of what building is to be like, it is evident that the season is going to open with plenty of vigor. No changes in discounts are yet announced, and we quote: Light, 3 to 6 in., 60 off; medium to heavy, 2 to 6 in., 70 off; 8 in., heavy, 40 off.

LEAD PIPE—Lead pipe has also felt the spring movement, and orders show a good increase in bulk. Plumbers are not buying more than they really think they will want, so that prospects look very healthy. There is no change in prices and we quote pipe and waste at 27½ off; traps and bends at 50; calking lead at 5c per pound.

SOLDER—In conjunction with lead pipe, solder is moving in much better bulk. Roofers are preparing for a good season, and are buying more heavily to meet the first demands on their services. We continue to quote 19½c for half-and-half, and 18½c for wiping.

IRON PIPE—Business is developing well and the cut seems to have brought forward a lot of extra business. Many orders have accumulated for lower freight rates, while immediate delivery orders are coming in steadily and well. We continue to quote discount from ¾-in to 4-in. black, 72½ off; galvanized, 62½ off.

ENAMELWARE—Heavy business is reported, and manufacturers are booked up well into the summer. Supply houses are experiencing a good demand, and they are taking care that supplies shall be in good shape for some time to come Prices are unchanged, but it is probable that quotations will be advanced in the States, and if that happens the Canadian market will follow.

RADIATORS AND BOILERS—Trade continues good considering the time of the year, while prospects look exceedingly healthy. We quote radiators and boilers at 60 off. Steamfittings are now about 70 off.

METALS—The markets are firmer than they were. Tin has advanced 1c. Open water prices for imported pig are now announced. Copper is weaker. We quote: Ingot copper, 14c; ingot tin, 32½c; lead, $3.75; pig iron, Middlesboro, No. 3, $16.50 to $16.75; Summerlee, $18.75 Heavy scrap red brass is 10c; light copper, 10c; heavy lead, 2¾c.

TORONTO.

March 31.—Inquiry is giving way to orders and the plumbing situation is improving. Building prospects are shaping toward reality, and when the ground opens up and the structures now in hand are further advanced, which will be before another month goes by, roughing-in will be rushed. The city trade is already good and country business is opening up well. From reports coming in from all directions this year is likely to be a record building year, and the plumbing houses anticipate a boom season.

Roll rim sinks have gone back to the old figures prevailing before the cut. Enamelware generally is steady and a splendid seller. Brass lines have increased in activity. Both iron, lead and soil pipe are the seasonable lines, and they are asked for satisfactorily in orders.

The new $13.50 closet combination is now handled by all the houses, but is not being pushed, the $15.50 line seemingly being preferred. Radiators are still at the low price, though there is a likelihood that prices will advance from the present cut figures.

The coming in of United States manufacturing houses and the changes among the local supply men are furnishing more interest to the trade than the market quotations just now. What these changes will do in the way of helping or hindering trade is conjectural, but it is a sign of the times, and shows the growth of the Canadian plumbing trade when United States firms are willing and anxious to cater to and come after work and business on this side of the border.

ROLL RIM SINKS—Prices advanced a week ago, and quotations are back to the figures prevailing some little time ago before the prices were cut. The 18x30 size is now $7.85, having gone up from $6.60; and the 16x24 size is $6.30 instead of $5.05.

ENAMELWARE — All the supply houses report bumper business, and from actual sales figures for the first three months of the year this year's sales will be double that of 1908. Manufacturers, too, say business is humming, and that they are running their plants at capacity.

BOILERS AND RADIATORS—As with the majority of plumbing lines, the spring is a good season for heating lines. Market quotations are still at 60 per cent., the cut price of a month ago; but there seems to be a fair likelihood of an advance over this figure.

IRON PIPE AND FITTINGS — Whether it is the reduced price or the anticipated building boom, black and galvanized iron pipe is going out in splendid shape. Soil pipe, lead pipe and solder are also in much demand. The roughing-in season is at hand and the trade are not willing to be caught napping by delaying orders. Malleable and cast iron fittings are active sympathetically with pipe.

CLOSET COMBINATIONS — While the $13.50 combination is held in stock by all the supply houses and the sales are fair, the $15.50 line seems to be the combination most in demand. Some higher grade combinations are carried and selling better than they were a year ago, but buyers have not yet entirely recovered from the recent money scare and are going a little cautiously.

BRASS GOODS—After a dull season brass goods are in a little better demand. Prices are firmer.

The Ontario Sanitary Mfg. Co., Windsor, has been incorporated with a capital of $40,000, to manufacture plumbing and sanitary supplies. The incorporators include F. A. Black, R. H. Evans and H. L. Evans, of Detroit, and E. J. Baxter, Windsor.

Mr. McIntyre, of the Gurney Foundry Co., Toronto, and Mr. Beckmyer, of the Wolverine Brass Co., Chatham, were visitors at W. S. James' store, Niagara on-the-Lake, on the last day of his spring opening, which was very successful and has advertised his business all over this part of the Niagara district

AN EFFECTIVE ADVERTISEMENT.

The accompanying ad., reproduced from a Vancouver paper, is gotten up in neat and effective style. The heading is catchy, and the wording is calculated to interest the reader. Plumbers cannot very well quote prices in their advertisements so they should endeavor to prepare simple and attractive matter such as shown in Mr. Rose's announcement.

Plumbing Pointers

The next time any of your plumbing equipment goes wrong, springs a leak, or needs repairing or replacement, take the shortest cut to satisfaction by phoning or sending for me.

S. A. ROSE

Plumbing and Heating Contractor.

505 Pender St. Phone 4137. VANCOUVER.

ECONOMICAL WATER HEATER.

Besides "Catalog K" and "Catalog No. 13," descriptive of "Ideal" plumbing lines and "Ideal" gas stoves and ranges, The Ideal Mfg. Co., Windsor and Detroit, are sending out a little circular illustrating their "independent gas water heater." This water heater is said to be most efficient and economical. It is made in two sizes, with a cast iron jacket, and is provided with a door to give ready access to the discs. The burner is a powerful one, and is made in two half-round sections, which can be removed for cleaning. Each half of the burner is connected with a separate valve. The discs may be had in cast iron, galvanized or brass. The small sized heater has eleven sections, and the larger thirteen sections, and the heater may be adjusted for manufactured or natural gas. When a continuous supply of hot water is required once the boiler becomes hot, the water can be kept at the desired temperature by turning off one of the burners and regulating the other. Send for one of the catalogues.

Enoch B. Dixon, who, until a few weeks ago, was a member of Potticary & Dixon's plumbing and heating establishment, St. Thomas, and who recently dissolved partnership, has opened a business in the east end of that city.

FOR SALE

AT A SACRIFICE

The patterns and tools of the Mann Brass Manufacturing Company, a complete line of Plumbers' Goods, up-to-date and in use only a short time. Will be sold for quarter of the cost.

Also six Turret Lathes, four Polishing Stands, Valve Grinder, Emery Stand and two Motors.

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WANTED—A second-hand power machine. State whether electric, gasoline power, or belt driven to cut ¾" to 6" pipe. State make, how long in use, and best spot cash price. Send replies to Box 813, PLUMBER AND STEAMFITTER, Toronto. (7)

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NOTICE—Users of Pitner Gasoline Lamps are warned against being induced to purchase parts of other makes of lamps to be used on the Pitner. The most vital part of any lamp is its generator, and the Pitner generator has been granted a patent in Canada, the United States and other countries, on the principle of its improved method of generating gasoline vapour. Supplies and parts for the Pitner lamps can be received by return mail by applying to our representatives or direct to the PITNER LIGHTING CO., Limited, 36-38 Lombard St., Toronto, Ont. [tf]

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SALESMAN WANTED for western Canada. Must have knowledge of plumbing supplies; able to figure hot water and steam heating. State age, experience and references to Box 792, PLUMBER AND STEAMFITTER, Toronto.

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FIRST-CLASS SALESMAN WANTED—By manufacturer of heating goods and engineer's specialties. Good position to man of A1 ability. State age and references. Box 817, PLUMBER AND STEAMFITTER, Toronto. (7)

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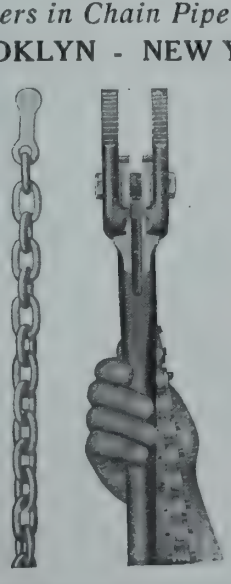

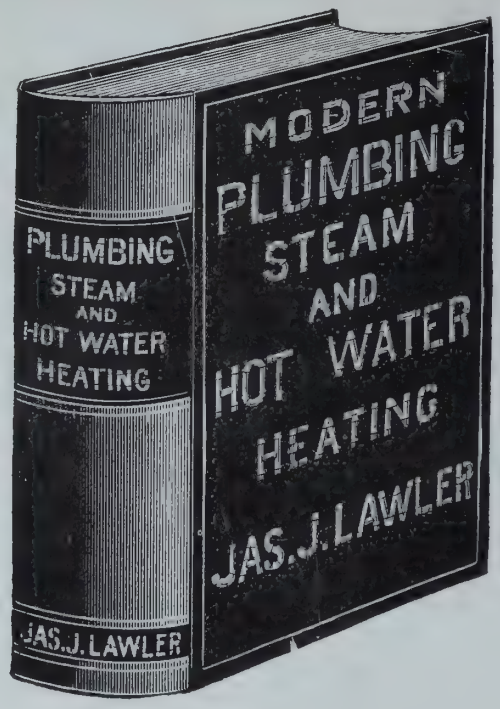

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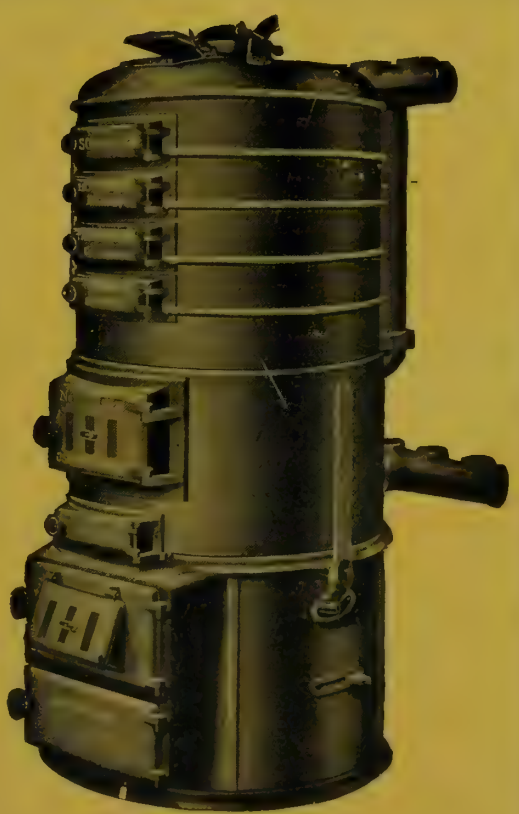

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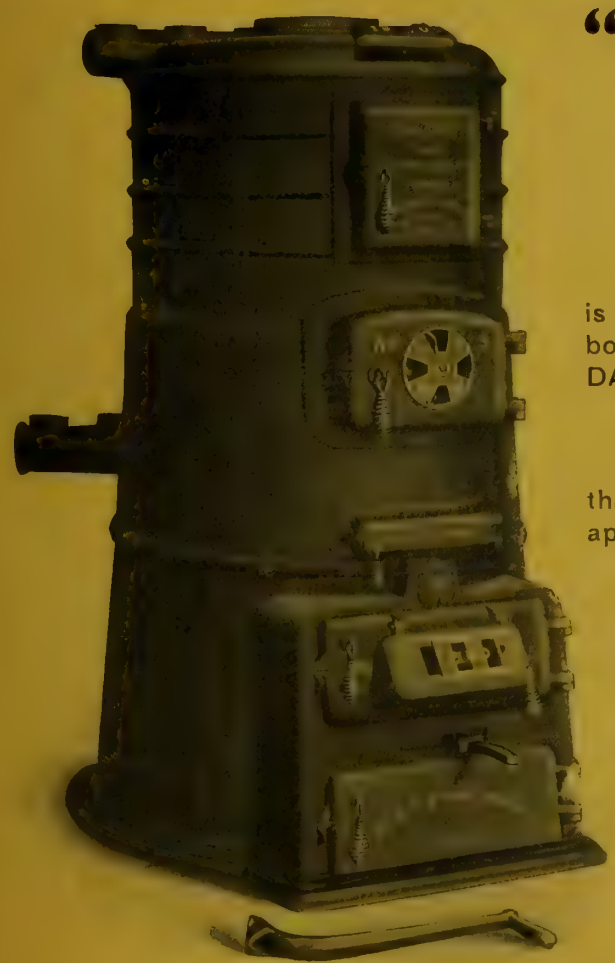

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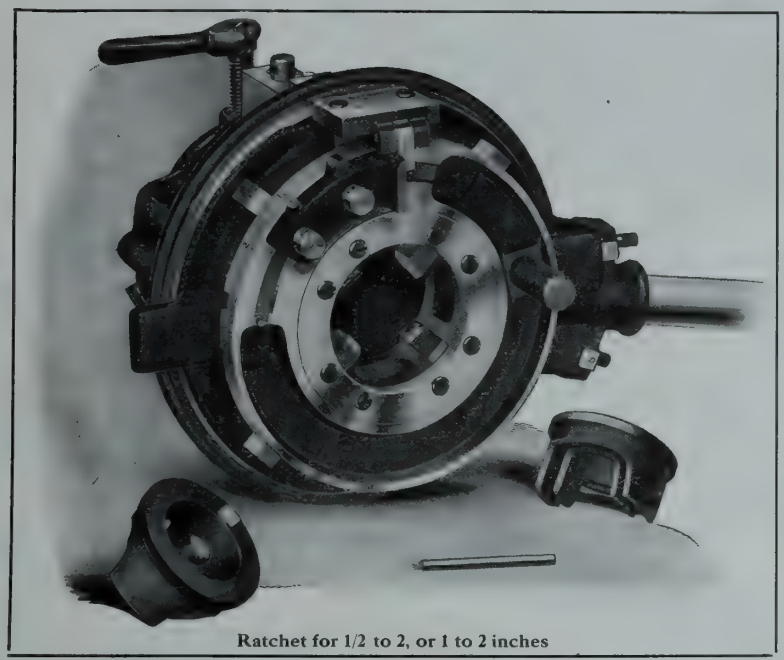

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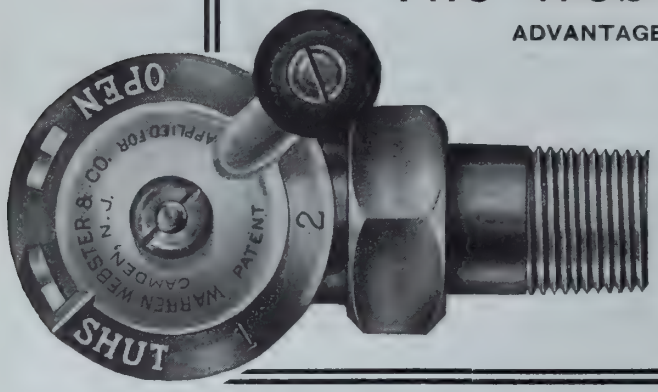

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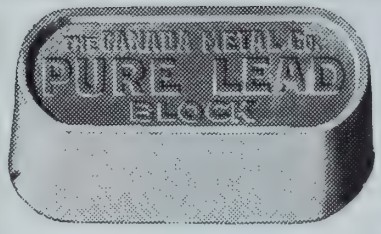

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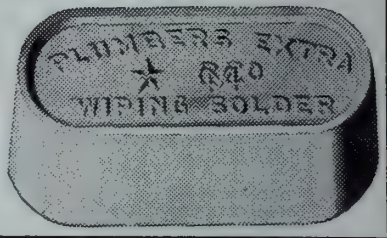

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Plumber and Steamfitter

and Sanitary Engineer of Canada

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MONTREAL, TORONTO AND WINNIPEG, APRIL 15, 1909

THE CANADIAN NATIONAL M. P. A. CONVENTION.

Secretary Munday of the National Association of Master Plumbers, on the receipt of a letter from the Editor of Plumber and Steamfitter, suggesting that this year's convention be held at Windsor at the same time that the National Association of the United States are meeting at Detroit, called a meeting of the executive at the Plumbers' Hall, Montreal, to discuss the matter. The president, J. A. Gordon was in the chair. Although the suggestion was favorably received, it was decided that nothing could be done in the matter until the opinion of the local vice-presidents of the Association had been received. It was decided that the secretary write to all the vice-presidents as to the progress of their sections and the advisability of holding the convention in their districts. Secretary Munday expressed himself as being very favorable to the Windsor idea, as it would give a good opportunity for the Canadian and United States plumbers to meet each other and exchange views on subjects affecting the welfare of the plumbing industry generally.

U. S. NATIONAL CONVENTIONS.

As announced in a previous issue the National M. P. A. of the United States have decided to hold their next convention at Detroit on June 22, 23 and 24.

Now the Board of Directors of the National Association of Master Steam and Hot Water Fitters have completed arrangements for holding their next convention in Niagara Falls, N.Y., on June 14, 15, 16 and 17. As in the past, it will not be a delegate convention, but open to all members in good standing.

MORE SUPPLY HOUSE CHANGES.

As announced in the Plumber and Steamfitter of April 1, further changes were expected in Toronto plumbing supply circles and we can now report that the Standard Sanitary Manufacturing Co., in addition to taking over the supply end of the Somerville, Limited, and Labatt Manufacturing Co. businesses, has purchased the supply business conducted by the General Brass Company, Toronto, and, as in the other cases, leaving the brass manufacturing end of the business to be continued by the old firms.

All the supply business previously done by the three firms named is, therefore, now being centred in the old Somerville premises at Church and Richmond Streets, Toronto, under the name of the Standard Sanitary Manufacturing Co., with W. A. Porter as manager. Extensive alterations are being made here, all the offices on the ground floor being torn out to make way for an enlargement of the show room. A fine entrance to the display room will be constructed off Church Street, while near the Richmond Street entrance a stairway will run upstairs, where the offices will be located in future. Few changes in the staffs will be made and an announcement regarding the territories to be covered by the travelers will be made shortly.

The establishment of the supply depot at Toronto by the Standard Sanitary Manufacturing Co., Pittsburg, and the probable location of a Canadian enamelware factory at Toronto or Welland by the same company during the coming year, is not expected to alter the Canadian agency for the company established many years ago in the hands of Thomas C. Collins, Montreal, through his office sales will continue to be made to the company's customers throughout Canada.

TOLEDO MASTER PLUMBERS DISCHARGED.

After nearly two years of patient waiting the criminal charges against the 58 master plumbers of Toledo have been finally disposed of without an opportunity for the vindication of the accused by trial upon the merits of the charges. As reported in the Metal Worker Judge Chittenden has sustained the motions, which meant the final discharge of the plumbers. Perhaps no one was more surprised than the plumbers themselves when indicted, as lack of co-operation was the one thing which was injuring the plumbing business of Toledo at that time more than anything else. Legal counsel was procured, pleas of "Not guilty" entered, and, despite all endeavors, those pleas continued upon the records of the court. From that day constant and persistent demands were made that they be given a hearing. At each term of court the demand was renewed, and in each instance the result was the same delay. Five terms of the criminal court passed by, and, although legally, the defendants were entitled to a discharge for want of prosecution, after three terms they still made every effort to secure a jury trial. When it finally became apparent that this wish was not to be gratified the defendants yielded to the solicitations of their counsel, and the motion to discharge was filed in behalf of 49 of the accused men. As no defense could be made to the motion and as Prosecuting Attorney Webster frankly admitted to the court that the State was not ready to go to trial and had not the means of refuting the motions, there could be but one result—viz., sustaining the contention of the defendants and striking the cases from the docket. Promptly thereafter the prosecuting attorney asked for and the court granted the discharge of the other nine defendants.

FOR CANADIAN PLUMBING INSPECTORS.

Editor Plumber and Steamfitter :—In the issue of March 1, of your paper, I read with considerable pleasure and interest an article calling attention to the apparent lack of interest of the Canadian Inspectors of Plumbing to the work of the American Society of Inspectors of Plumbing and Sanitary Engineers. This chastisement, in print, of the Canadian Inspectors, while severe, was needful, as I think the copy of the enclosed letter will show.

"March 30, 1909.

Plumbing Inspector, Manitoba,

Dear Sir,—Your letter of the 26th instant, together with application for membership in the American Society of Inspectors of Plumbing and Sanitary Engineers, received, for which I thank you.

I noticed the hard jolt the Canadian Plumber and Steamfitter gave the Canadian inspectors of plumbing, and they deserve all the criticism this live little paper heaped upon them. I hope you will use your influence with some of the inspectors and get them to write to me or to Charles B. Ball, president of the society, and chief sanitary inspector, Chicago, Illinois, for applications.

Very truly yours,

HENRY B. DAVIS,

Chief Inspector of Plumbing,

District of Columbia.

When replying to an inquiry from this Canadian inspector regarding plumbing construction I sent him an application as I did to another Canadian inspector recently, and while the one has returned the application filled out for membership I have not heard from the other. The fact these two gentlemen are seeking information on plumbing subjects, shows them to be progressive, and that they wish to keep abreast of the times on sanitary work, and by one of them applying for membership shows he is looking out for his own interest, intellectually, as well as that of the city and the people whose interest and health he assists in guarding. This is a duty, as you stated in your paper that inspectors of plumbing of all cities "owe to themselves, to the master plumber whose work they supervise, and to the public whose interests they are intended to be guardians of." We want to use the idea and be benefitted by the experience and knowledge that each inspector has, and we in turn wish to give him the benefits of all advanced ideas in plumbing construction, and to assist him in every possible way to make himself a conscientious and efficient inspector and useful citizen of the city he represents.

The influence of our society and kindred organizations, with the papers read by the members appearing in the various trade publications, and with these able and valuable papers devoting considerable space to plumbing subjects, has stirred up interest in the subject of sanitary matters throughout the entire North American continent, and set men to thinking that the sanitary conditions existing in their cities, towns, villages and houses, is not what it should be. Reports from all over the country show that efforts are being made to have State plumbing laws passed where none exist—to appoint an inspector of plumbing—providing for the installation of sewer and water systems, and the various manufacturers of plumbing supplies are making advanced strides in the manufacturing of plumbing goods in order to meet the modern ideas of fixtures, designs, and the use of superior material in their manufacture.

What good we do for the cities of the United States, we wish to extend likewise to our near and friendly neighbor, Canada and its people. The Canadian inspector need not hesitate to apply for membership because the society bears the name of American Society of Inspectors of Plumbing and Sanitary Engineers, as Canada is in North American continent, and our society is desirous of extending its influence for good in both North and South America and adjacent Islands. We have now as members, one inspector from the Hawaii Islands, one from Kingston, Jamacia (British possession), two in Cuba, and one at Panama (Canal Zone), two Canadians, and one application for membership not acted upon. It will be seen we are not a (close corporation) as far as confining our membership to the inspectors in the United States only. We elected to full membership at the meeting in Omaha, Nebraska, in February, 1909, 30 new members, and 14 associate members, but I regret, as your paper stated, that no Canadian inspector's name appears in the list of new members, nor was one even present at the meeting.

I therefore trust you will use your influence through your valuable paper to stir up interest among the Canadian inspectors to join the society, or at least attend the next meeting to be held next February, (1910), at Trenton, N.J. If they do I am sure they will present their applications for membership, as the dues are very nominal and within the means of most inspectors, being only five dollars initiation fee, and five dollars yearly dues. In addition to the membership each member received each year a bound book in which all papers read and the subjects discussed at the yearly meeting are printed.

There is nothing for an inspector to lose and everything for him to gain by being a member, and therefore they should not hesitate to apply for membership.

Very respectfully,

HENRY B. DAVIS,

Chief Inspector of Plumbing, Washington, D.C.

NO TAXES ON TRAVELERS.

The recent abolition of the tax on travelers in Prince Edward Island makes Canada a clear field now for those knights of progress and introducers of new ideas and goods, the traveling salesmen.

Two or three years ago Quebec and British Columbia imposed taxes on travelers and the obstacles to doing business caused many merchants to go from Montreal to Ottawa to buy from a salesman rather than have the salesman enter Quebec and sell in the natural way.

This method of raising funds was not based on sound business principles and had to go by the board, the Dominion Government arranging with the Provincial legislators for more equitable means of raising funds.

Foreign manufacturers locating branches in Canada must, of course, pay taxes and the fly-by-night salesmen who do a peddling business in opposition to tax-paying merchants are also called upon to help pay their share towards the government of the community. But all barriers are now removed and there is nothing to prevent legitimate traveling salesmen from entering any Canadian province and selling goods to wholesale or retail merchants.

Toronto's Largest Public Lavatory

Description of Toronto's First Public Comfort Station for Both Men and Women—Located at the Head of Yonge Street Opposite a Suburban Railway Depot.

QUERIES RE PUBLIC LAVATORIES.

A correspondent at Ottawa has suggested that a column be devoted in Plumber and Steamfitter for correspondence on the subject of public lavatories Ottawa, with a population of 100 000, he points out, has not a single comfort station.

The suggestion is a good one and short letters are invited along the lines suggested. If any master plumber wants to start an agitation for a public lavatory in his town, and seeks information on any matter, he is urged to send a brief letter to be discussed and answered in this column.

The first of the new public conveniences in Toronto, located at the corner of Cottingham and Yonge Streets, which was opened on February 11, 1906. The station is built above ground, and while intended primarily as a convenience for men only, an addition for women (the only one in the city) has been added of late.

Up to the end of 1906—a period of 46 weeks since the opening—the station was used by 99,965 persons; an average of 2,173 per week, or 310 per day. The largest attendance in any week during this period was in that week ending September 9, when there were recorded 2,831 visitors. At present the average attendance is about 3,000 per week.

The building stands on a small triangle of land formed between the C.P. R, line and Cottingham and Yonge Sts. It is built of cement blocks in imitation of stone. The roof is of red corrugated Spanish tiles, and inside the ceilings are of wood. The builder was Harry Jennings, who also constructed the Adelaide Street station. The plumbing in the men's section was done by W. R. Willis; and that in the women's addition by R. W. Snyder, who likewise installed the plumbing in the post office underground station. Surrounding the structure is an ornamental iron fence, made by the Shipway Iron, Bell and Wire Mfg. Co., Toronto. The part of the lot not occupied by the building is neatly sodded. The cost of the station was about $7,000.

The approaches are on the south side at the extreme ends of the building. Leading to the men's section is a vestibule to keep out the weather. The inside dimensions of the men's room are 21 by 10 feet. A Pease hot-water boiler heated by coal fire, supplies the heat through sectional wall radiators for both rooms, and the station is lighted by gas at night. In the day time four sets of windows in the men's room and three sets in the women's room admit the light.

The floors are laid with marble blocks, and the walls are finished with white-enamelled tiled bricks. The lavatories, urinals and closets, as well as the marble partitions and nickled pipes and trimmings were supplied by Somerville, Ltd., Toronto.

The urinals are of porcelain, two banks of three each on either side wall; and at the end are three closets. The urinals are cleansed automatically by a Quinn Automatic Flush Valve. There are two wash basins with mirror above on one side wall near the door, and immediately opposite is the caretaker's room.

The men's lavatory is open from 6 a.m. until after midnight, and two men are in charge. The women's room is open from about 7 a.m. in summer and 8 o'clock in winter until 6 in the evening. As yet this room is not much used, not more than a dozen women and children a day taking advantage of the convenience. The idea is yet new to Toronto; the station is far from the business centre and nearer the homes of the women; the women's entrance is not as convenient as the men's and the more shrinking nature of women from being seen going near such a building, have much to do with this as yet apparent uselessness of the station.

The women's lavatory is similar to the men's room, with the exception that it is much smaller, occupying the apex of the triangle. The woman in charge has a small apartment in the angle of room, in which she has a couch and a small oil stove for the making of tea. The civic authorities might supply these necessities for the women using this convenience at a nominal charge for very often a rest and a cup of tea will revive an otherwise sick person.

There are three closets and a set of two wash basins, but only cold water is laid on. A couple of chairs are a con-

Interior of Men's Room in the Cottingham Street Public Lavatory.

venience, and a small wooden vestibule keeps out the cold. About the room are some potted plants.

Ventilation is had through sectional windows let in the roof of both men's and women's lavatories, and in the side walls above every urinal and closet are small round metal vents, which are by no means perfect; all winter long these having to be kept closed and stuffed with paper to keep out the biting wind, rather than to let the putrid air out. The fittings throughout are of hardwood. Neat signs are on the walls. Towels and soap are supplied for a 5-cent charge.

If any suggestions as to improvement might be made they are regarding the heating and ventilation of the station. The burning of coal has to some extent relieved the heating question. At first gas was used, and whether it was because of this or that the gas consumer and heater were at fault, certainly the coal heater gives better

Men's and Women's Convenience Station at Yonge and Cottingham Streets, Toronto.

satisfaction than those in the other stations, and more satisfaction than was the case in this station at first. But the whole system should be changed. A small furnace below the building is preferable to the present arrangement whereby the heating surface begins half way up the wall. With the continual opening of the door the floor area in winter is always cold and instead of there being a low down heat to force a draft up the wall vents the heat does not strike the wall until about as high up as the head of an ordinary man. The vents above in the ceiling then carry off this heat and it is almost entirely wasted. Sometimes during the winter the cold is felt pretty severely in the women's room, although a fair fire is burning in the coal heater. The wall registers are too high. If the heating surface began nearer the floor the rooms would be more comfortable to enter, and a better draft would be created to carry off the fumes and change the air of the stations.

Mr. Whittaker, one of the men in charge, has devised a series of wire pulls which he manipulates from his room, whereby he is enabled to empty the water tank above any closet when the user neglects or forgets to do so.

SOMERVILLE'S DOWN-TOWN OFFICE.

A down-town sales office and showroom has been opened by Somerville, Limited, Toronto, in the Saturday Night building, 28 Adelaide Street West, (Phone 7509) where Fred Somerville will have a display of the products of their factory, including plumbers' and steamfitters' brass goods, closet tanks, lead pipe, traps, bends and solder.

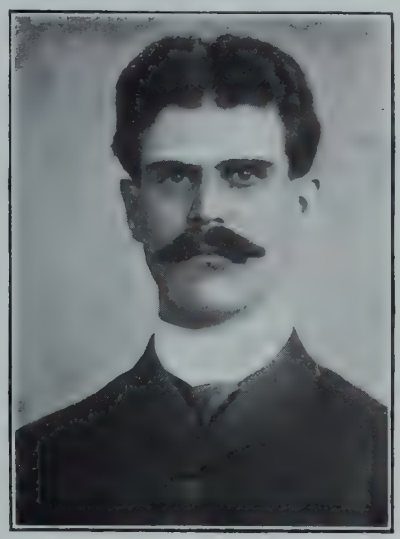
Mr. Somerville, who is one of the best known men in the plumbing supply trade in Canada, will give his whole attention to the sales end of the business and his wide connection, backed up by personal attention to orders, ought to result in an increased volume of business.

The general offices of the company will be continued at St. Helens Avenue, where Lorne Somerville is in charge of the office and W. Keating, superintendent of the brass foundry and lead works.

Following the report of other business transfers it was rumored this week that the National Plumbing Supply Co., Toronto, would be taken over by the James Robertson Co., Toronto. E. A. Rogers, manager of the National Company, however, states that there is no truth in the report.

MONTREAL PLUMBERS ELECT OFFICERS.

The annual meeting of the Master Plumbers' Association of Montreal for the election of officers was held in the



JOSEPH LAURIER,
Elected President Montreal Master Plumbers' Association.

Plumbers' Hall, Montreal, last week, the retiring president, J. A. Gordon, taking the chair. J. Laurier was elected president, Allan Pope first vice-president, D.

H. W. MUNDAY,
Elected Secretary Montreal Master Plumbers' Association.

Dugas second vice-president, and H. W. Munday secretary. The retiring officers were thanked for their services.

Robertson & Godson, Vancouver, have been appointed agents for British Columbia for the Imperial Granite Company, of Toronto, manufacturers of "Crown" and "Empire" cement laundry tubs.

Work of the City Plumbing Inspector

His Relation to the Health Office Outlined in a Paper Read by Ralph W. Connell, M.D., Commissioner of Health, Omaha, at the Recent Convention of the American Society of Plumbing Inspectors and Sanitary Engineers.

I have chosen for my subject "the City Plumbing Inspector and his relation to the Health Office." Possibly I should have included not only plumbing inspectors but all plumbers, as some of my remarks will apply to all plumbers as well as the inspector.

In the first place, I think that the plumbing inspector should be under the health department and not a separate department or a part of the building inspector's force, as is the case in this and other cities. I will state in this connection that although H. W. McVea, Omaha's plumbing inspector, is under the department of the building Inspector, he has worked in perfect harmony with the Health Office, and any plumbing nuisance he has not been able to abate, he has reported to me at once and through the Health Office the nuisance has been abated. Omaha should be congratulated in having as efficient a plumbing inspector as the present incumbent, H. W. McVea.

Inspector Should be Special Policeman.

The power of the plumbing inspector should be equivalent or as great as any sanitary inspector under the Health Department. He should be sworn in as a special policeman with power to abate at once any defective plumbing that might be endangering life. It should be his duty to at once report to the Health Department any defective plumbing coming under his notice and after inspection to include in his report what is necessary to abate the same. The inspector should be a man of honor, incorruptible, positive and courageous. If he is active in the discharge of his duties he will not hold his position very long before he will have all these qualities severely tested. His honor and incorruptibility will be tested not necessarily by the offer of a money consideration, although many of you can bear witness that is not an unfrequent occurrence, but the pleading for time, lack of funds or the privilege to repair some glaring defect and let the balance of the work be postponed to some future time, when you know by allowing it to be put off you are endangering life. Perhaps he will have a personal friend of yours intercede in his behalf. He will attempt to bring politics into play and in many other ways will he tax your honor, courage and positiveness. The inspector when accepting his position should realize the great responsibility devolving upon him. He should thoroughly understand the great danger to health and life itself by defective and unsanitary conditions of plumbing. He should ever realize failure to have the same repaired, no matter what inducements may be offered him, cannot compensate or off-set the health and life itself of those who may come in contact and are obliged to inhale the poisoned atmosphere due to the unsanitary condition.

Must Know His Business.

He should be a man who is well versed in modern plumbing and sanitary engineering. He should be able after his inspection, to tell whether the work is sanitary from the standpoint of sanitation at the present time. What a few years ago would pass as a sanitary condition of plumbing will at the present time be considered anything but sanitary. It was only a few years ago when enclosed plumbing of bath tubs, toilets, sinks, etc., was considered the proper thing and perfectly sanitary, while to-day we know they are the hot beds of filth, odors and disease germs and the efforts of all sanitary plumbing and sanitary engineers is to make all plumbing as open and accessible to being kept thoroughly cleaned as possible. The time is past when sanitary plumbing is a luxury only to be enjoyed by the rich, but it is a necessity which even the poor must have to protect their health and lives. I feel sure the time is not far distant when there will be sewers not only in cities, but in small towns and even the farm will have their faults connected with sanitary cess pools or a septic tank.

Should Work With the Trade.

The plumbing inspector should at all times cultivate a friendly relation with all the plumbers in the city, giving them to understand that he will appreciate a report from them of any defective plumbing which may come under their notice, and that he will treat their information with strict confidence and never under any circumstances let the owner of the property know where you receive your information. Knowledge obtained from any source of faulty plumbing, whether from a brother plumber, some tenant or neighbor, should be treated with strict confidence and the source of your information never divulged. The inspector should endeavor to have every plumber in the city a sanitary inspector so far as defective plumbing is concerned and to impress on him, it is a duty he owes to his profession, his neighbor and the citizens as a whole, to report to the Health Office or Plumbing Inspector any faulty plumbing wherever found.

Bad Conditions Undermine Health.

The plumbing inspector as an adjunct of the health office where there are a large number of people employed in any store, factory, tenement house or other buildings, he should see there are sufficient toilets and proper ventilation of the same. He should know and realize that in order for plumbing to be injurious to health it is not necessary for there to be a leak and sewer gas escaping, but that an unclean, wet condition without proper ventilation, causing foul air, with constant inhaling of the same, will undermine the health and make a person susceptible to contract a disease from some exposure which they would not have contracted if their health was not already impaired from the breathing of the foul air.

In conclusion I will add, if anything I may have said will be the means of making any of you who have the welfare and health of many of your citizens under your control, more careful and zealous in seeing that an unsanitary condition of plumbing that might endanger the health of some citizen is corrected at once, regardless of who it is that is maintaining the same, I will feel amply repaid for any effort I have made to make your meeting a success.

A PLUMBER CLAIMS MONTREAL.

Some interesting financial possibilities have lately developed in the affairs of John Macdonald, a prosperous plumber, who recently removed from Saranac Lake, N.Y., to Plattsburg. The Macdonalds are claimants for a very substantial portion of land at Montreal. This land, which is now valued at $8,000,000, was a war-time grant from the British Crown to the great-great-grandfather of John Macdonald, according to the latter's story. The Macdonalds have engaged counsel to prosecute their claim and these attorneys assure them that the case is a strong one. Should the Macdonalds win the former Saranac Lake plumber figures he will receive $250,000 as his share.

Deterioration of Galvanized and Wrought Pipe

Points Raised in Letters Regarding the Life and Utility of Various Kinds of Pipe—Written for Plumber and Steamfitter by J. F. Brady, Washington, D.C.

The question of whether galvanized iron, wrought iron or steel pipe can be safely placed in a building above ground is being given considerable thought, throughout U.S. and Canada, as the following letters from two inspectors of plumbing (one a Canadian) and the replies by H. B. Davis, chief inspector of plumbing and past president of the American Society of Plumbing Inspectors and Sanitary Engineers, Washington, D. C., will indicate:

Inquiry From Canadian Inspector.

"While reading over the report of the fourth annual meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers recently, I saw a statement made by you, that some of the "Durham systems" installed in your city some 10 to 15 years ago had become eaten through, from some cause yet unknown.

"There is quite an agitation here in favor of including the Durham system, I thought you might be able to give me some further information. What I would like to know is (1) what were the sizes of the pipe; (2) were they soil or waste pipes; (3) were they plain, black iron or steel pipes, or were they galvanized?

"Have you ever found the same thing to happen to cast iron?

"Do you thing the life of the present "Durham system" as long as our cast iron?

"I might say that we have a very few jobs with the "Durham system" in, as our present by-law does not permit it, and there has to be a special permit issued by the city council before work can be done. Do you find many of the smaller sizes of wrought iron pipe choking up, owing to the end of the pipe not being reamed or cleaned out when first installed."

Mr. Davis' Reply.

I have delayed answering your letter to try and get some information which would be of benefit to you.

In the first place, I did not make the statement "that some Durham systems installed in this city some 10 to 15 years ago, had become eaten through." It was Edward Quinn, supervisor of plumbing, St. Louis, Missouri, in his address at Omaha.

I have had no such experience, knowing of only one case where galvanized iron pipe is beginning to deteriorate, and that is in the Star newspaper building in this city, where acids and chemicals are used in photographic work, and to these gases and acids I attribute the deterioration of the pipe. I can see no reason why wrought iron pipe, galvanized inside and outside, and with the threaded ends well coated with red lead, should not last as long as a cast iron pipe under proper use, above ground and especially is this so of the smaller waste and vents of this material.

The point first attacked in galvanized iron is the exposed threaded portion of the pipe, not screwed home in the fitting. The threading cuts off the galvanizing and it is thus subjected to rust, formed from condensation and humidity, etc. Until we required all small waste and vent pipe to be of lead or galvanized iron, the black iron pipes were found at ells full of rust scales.

I have heard of no such complaint on small galvanized iron pipes which is used almost exclusively over cast iron or lead. No cast iron vent under 3 inches is permitted by the regulations, so that in all such cases galvanized iron pipe is used. Of course it is necessary to see that all pipes are properly reamed and cuttings removed from pipe before it is put in place, but the inspector must trust to the workmen to do so.

I enclose a copy of my plumbing code and a plumbing section. Also an application for membership into our society to which there is no reason why the Canadian inspectors should not belong.

M. M. O'Connell, former inspector of plumbing, Ottawa, Canada, and H. F. Shade, inspector of plumbing, Victoria, B.C., are both members.

I received an application from James Smith, inspector of plumbing, Winnipeg, Manitoba, on March 26, 1909, and I should be very glad indeed to receive the enclosed application properly filled out. Send no money until you hear from the secretary regarding the action on the application.

Another Inquiry.

"I write you for a copy of your building ordinance or plumbing code, and your opinion of using iron or lead pipes for waste drains under floors, or otherwise, and which is the most durable, for information as we are about to make a change in our plumbing code to the best and most practical manner."

Reply by Mr. Davis.

"In reply to your inquiry as to the use of lead or iron pipe for drains under floors, I have to tell you this is a subject under consideration at this time, as I replied this day to a Canadian inspector of plumbing, on about the same subject in regard to galvanized iron.

"I raise no question to the use of galvanized iron waste and vent pipe, as I have experienced little or no difficulty or complaint of pipes rusting and breaking, except in one large building where acids and chemicals are used for photographic purposes, which are discharged into the sewer. There is no question in my mind that acid vapors are responsible in this case. The weak point of galvanized iron pipe is the threaded end where galvanizing is cut off in threading the pipe, and if not thoroughly coated with paint will rust.

"Galvanized iron pipe laid in concrete floors without a coat of asphalt may also be considered questionable practice.

"The use of lead pipe for waste and vents is open to criticism on account of rats cutting into same, carpenters driving nails into them, sagging and making mashing when laid in concrete floors, by the man putting in the concrete.

"It will be seen the question is open to discussion for both lead and galvanized iron pipe are open to criticism, yet both have some good points."

* * *

At the meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers at Chicago, in 1908, a piece of 6-in. pipe—wrought iron, was submitted by a member, with the statement that three lines of 4, 6 and 8-in. pipe had been hung on the ceiling of a large New York hotel for twenty years, and that for six lineal feet the upper portion of the 6-in, pipe was entirely rusted through; while the bottom and sides of the pipe was a little thicker, due to accumulation, and was not affected. The deterioration was thought to be due to gases or electrolysis. Several questions naturally arise: Was the pipe galvanized inside and outside; was it steel or wrought iron pipe, and whether the grade of the pipe made, or galvanizing done, twenty years back was a better or a poorer material or process of galvanizing than used at the present time? Whether acids were discharged into the suspended lines or whether a running trap existed on the house drain, and if not, whether it would have retarded gases from the public sewer acting on the pipe? And again, whether gas in the public sewers would be sufficient in quantity to attack the pipe Or perhaps it was electrolysis; if so, why was not the entire pipe pitted, or was it

due to action of chemicals in the water, condensation, or flaking of the galvanizing at this particular point?

At the Omaha meeting of the society in February, 1909, one of our members, whose remarks are worth considering, made the statement, that in the large buildings in his city where galvanized iron pipe had been in use for ten to fifteen years, there were numerous instances where the entire system was deteriorating and would have to be replaced at a great cost.

If the life of galvanized iron is so short, its value should be determined and nothing is so enlightening than to have those who have had experience with the use of this material, express their views and experience publicly through the medium of the valuable trade press, which is doing its share in the uplift of sanitary practices.

I should like to see some statements from the manufacturers of galvanized iron pipe, as well as from the inspectors of plumbing, master plumbers and the men, whose opinion should be given careful thought, the journeymen plumbers, who actually install the pipe and remove defective pipe.

Only one case of serious deterioration of galvanized iron pipe has been brought to my attention, and that is unquestionably due to the disposing of chemicals used in photographic rooms, into the house drain, and several cases of cast iron lines being eaten through by acids —in one case from chemical laboratory, and in another case an entire cast iron sewer of a garage had to be replaced with terra cotta pipe encased in 3-ins. of cement and a large diluting tank installed. So that acids or its gases are just as destructive to cast iron as it is on galvanized iron or steel pipe. Galvanized iron water pipe laid underground has proven an inferior material to use, rusting out in a few years, and especially is it so made useless if laid in ashes, as a lye is formed by the action of the ashes and surface water, which soon causes the pipe to decay, and for that reason the City of Washington requires the use of XX lead water pipe.

Editor's Note.—Canadian inspectors of plumbing, master plumbers and manufacturers of pipe are requested to express their views on this question for publication in following issues of The Plumber and Steamfitter.

RUST IN GALVANIZED PIPES.

W. G. B., Louisville, Kentucky, writing in the Metal Worker, New York, says:

"For years galvanized iron pipe has been the usual supply conduit for house service in Kentucky. In some localities little or no trouble from this source has been experienced. In others the supply systems are beginning to break down with vengeance. All of us are quaking in our boots more or less, for fear that our reputation may be sullied by the failure of the supply in some good house where we endeavored to and thought we had installed a good job that would give long service. Some of the out-of-town members attending the recent Kentucky State convention of master plumbers in Louisville were of the opinion that lead would again be the pipe for water service in good work, regardless of the extra cost of lead and its instalation. The plumbers are not to blame. Even against their will those desirous of instaling only the most reliable work must in 90 per cent. of their jobs follow the way of the majority or lose the work. If lead supplies become general again the resulting work will be better than in the old days of all lead pipe jobs. For some purposes and in some locations lead never was good, and the better qualities of brass and iron for these purposes and the limitations of all are better known, so there is less prejudice for or against any metal used for pipe than prevailed during the all-lead supply pipe regime. Lead would, therefore, be used on its merits and in combination with iron or brass in a way that would give more satisfactory service than the ordinary job could if made either of iron or lead alone.

Determining Corrosive Agents.

"We have had more trouble with steel and mild steel pipe than with wrought iron from incrustation of rust or some salts of lime, leaky joints at early age and in breaking down from general affection within an unreasonable short period of time. What the chemical action or the corrosive agents are is not within the scope of the plumber to specify. The water supply of different locations vary so much and the possible corroding agents and their actions are so complex that no ordinary person can determine them. In my experience much of this trouble begins at the cut ends, where both the coating and the material of the pipe are exposed to the action of the water supply and whatever it may contain. Most nipples and pipe taken out because of leakage due to corrosion have the maximum reduction at the ends, though some cases have shown the pipe either pitted or reduced throughout.

"Iron ore, bloom and soil containing much iron are widely distributed in Kentucky. Much of the state is made up of limestone districts. Both iron and limestone are found on the same watersheds in many places. The incrustation in these districts is generally one of the salts of lime. I know of one rural customer who has two water backs for his range; one is kept in service while the other is being cleaned, first by soaking in some solution which he has found loosens that particular crust, then by scratching the inside with wire, and finally by flushing so as to restore the cavity to its original size. The customer has a wrench and changes the water backs at regular intervals. No complaint as to chokage of balance of work is on record.

Borings Start Chemical Action.

"While it would take an analytical chemist to specifically determine anything like the real action of a single case, I look at the matter somewhat as follows and form these remarks some one capable may deduce something of more practical value to the trade. Iron ends, borings and chips may be found in nearly any job. Rust is an oxide of iron containing more oxygen than would be necessary for it to enter into some combination ending in the formation of sulphates or phosphates. Air in the water supply can take oxygen from the rust. It seems there are chances for enough rust and corrosive agents to be always present to start something. Air may oxidize sulphate of iron and set free some sulphuric acid; this in turn can attack nitrates of lime and set free nitric acid. One or the other or both of these acids so set free may corrode the pipe or coating, and even their presence in the first place may be due in some measure to corrosion. The whole matter becomes so complicated as to be hopeless of solution by the plumber. To the presence of lime and iron in Kentucky, as before mentioned, is doubtless due much of the trouble we are having with galvanized pipe in this state.

"One reason that makes the troubles from incrustation more numerous perhaps is the scrimpy sizes of pipe used. A ridiculously small pipe will supply sufficient water, and the job may be and generally is accepted as adequate in all respects It may be while the pipe is new, but the result is in sufficient complaint from the owners to cause larger supplies to be used. Where I am not fully acquainted with the characteristics of the water supply I make it a point to use nothing less than ¾-in., except the shortest pieces expedient for lavatory and closet tank supplies.

"The difference in cost between iron and lead in initial work is not so great as to justify any considerable cost of maintenance of galvanized iron or steel pipe. If it breaks down so early from corrosion or chemical action of any nature that cost of renewing the supply pipe added to its initial cost brings it in the neighborhood of the cost of lead and the relative lifetime of the two metals so used is favorable it would be better to install lead. The plumbers may yet be forced to make a stand for lead supplies."

Time Records for Master Plumbers

Illsey Bros., Red Deer, Alberta, are using what they consider a very satisfactory system of keeping track of the time and material used on tinsmithing or plumbing jobs, these being adopted after others had been used unsuccessfully. Three of the forms are reproduced, together with their explanation of the workings of their system:

The time sheet (Fig. 1) shows at a glance how a record is kept of the date of order; by whom given; character of work; quantity and class of material to be charged; workman's and helper's names; number of hours each, and a few other items of value when making entries in the office. This time sheet, or as we should call it, job slip, can be used in connection with the time report (Fig. 2) which is a weekly one, and a

REPAIR TAG.

No. 1900 Date.....

Owner.....

Address.....

Promised.....

REPAIRS	CHARGES.	
Amt. Due		

No. 1900 Promised.....

CLAIM CHECK.

ALL REPAIRS CASH.

NO WORK DELIVERED WITHOUT THIS CHECK.

Fig. 3.—Illsey Bros. Repair Tag.

very close check can be kept on the men. It is also a benefit to the employe as he receives every cent to which he is entitled, as shown by his reports. A special book is kept in which entries are made weekly, or, if necessary, each day. By using this sheet, the exact cost of material and time is before one at a glance, and almost every job can be made to show the exact results as soon as it is completed. The use of this sheet will inspire men to look after their work in a careful and methodical manner, and there can be no doubt but that there is to much laxity in many shops, in this very respect. To keep accurate records in a tinshop has been one of the problems of the modern dealer, he being vitally interested in the adoption of methods which have proven themselves to be practical. The repair tag (Fig. 3) is a splendid means of keeping track of repairs."

The Owen Sound town hall will be remodelled and extended at a cost of nearly $12,000.

ILLSEY BROTHERS, RED DEER

TIME REPORT FOR WEEK ENDING FRIDAY NIGHT 190

TURN IN YOUR REPORT PROMPTLY BY SATURDAY MORNING. FILL IN DATES AND OTHER PARTICULARS. NUMBER OF HOURS ON EACH JOB	DATES 190		WHERE WORKING	NUMBER OF HOURS	WHAT DOING
	Saturday				
	Mo.	Day			
	Monday				
	Mo.	Day			
	Tuesday				
	Mo.	Day			
	Wednesday				
	Mo.	Day			
	Thursday				
	Mo.	Day			
	Friday				
	Mo.	Day			

Approved Signature

Fig. 2.—Time Report Sheet, 10x7¼ Inches.

The most valuable feature of success is the struggle that precedes it.

A broken promise cannot be mended so that it will look new.

Use a Job Slip For Each Job

Illsey Brothers

Charge all Material Used

STEAMFITTERS, TINNERS AND SANITARY PLUMBERS

RED DEER, ALTA

Order Received.....190 Job Slip No.....

Name..... By Whom Ordered.....

Address.....

CHARACTER OF WORK

Please note any important information with respect to work from party giving order.

Quantity	Material To Be Charged	To be used in Office Only

Workman's Name..... No. Hours.....

Helper's Name..... No. Hours.....

Date Job Finished.....

IF NECESSARY USE OTHER SIDE OF SHEET. HAND IN AT OFFICE IMMEDIATELY AFTER JOB IS COMPLETED

Fig. 1.—Job Slip 8½x6½ Inches.

Advice on Setting Up the Boiler

"Phoenix" in Domestic Engineering, Gives Good Advice as to How to Set up a Cast Iron Boiler in Order to Ensure its Proper Working.

Many years ago nearly all heating boilers were bricked in, but the modern portable house heating boiler does not require this additional expense, which generally ran from $12 to $25.

In starting to set up the boiler it is best to begin with the freight house. Go there and view the boiler. Take a bolt or hammer and sound the different sections. If one is cracked you can very easily detect it and you are then on the spot and in a position to demand a settlement from the railroad company. Check over the freight bill and see that you have all that is coming to you. This done and everything satisfactorily accounted for, load the boiler upon a dray and start for the job, and upon arriving there drive up to the cellar door, or nearest point at which you can get to where the boiler will be set. Lay some planks lengthways upon the cellar stairs so the sections will slide down easily. A piece of one-inch rope about fifteen or twenty feet long will be found very useful at this point. Tie one end of the rope securely into the section. Now two men are all that are necessary in the game right here, and any more would be in the way. One man standing at the head of the stairs with the rope in his hands can easily control the descent of each section. The second man can be immediately in front of the section to joggle it a bit in case it sticks, or runs into the cellar wall and sticks. When the sections and boxes containing the trimmings are safely landed in the cellar, you are ready to proceed.

Preparing the Foundation.

In case the cellar bottom is cemented and you have a reasonably high cellar, it is better to put the base upon a raised foundation, say eight inches high. Most house heating boilers have a very shallow base and in setting a boiler upon a foundation made in this manner you secure a much deeper ash pit and avoid having any burned out grates, from the over-accumulation of ashes later on.

In case the cellar bottom is not cemented or bricked, and there is no danger of water coming in, I would dig down about twelve inches and put in about three or four inches of concrete and lay my brick around the outer edge in such a manner as to catch the rim of the base.

Place your base upon the foundation leveling it up, and do not put any more load upon the foundation until it has "set." Then place the grates in the base section.

In setting up an ordinary house boiler the fitter and helper will be sufficient to handle the sections, either by sheer muscle or with the aid of block and tackle. On the heavier sectional boilers by using a block and tackle a third man may be necessary for about half a day. The front section should be erected in place first. It is easier in case you have a push nipple boiler, to pull the remaining sections up to the front section—which is in proper position upon the front of the base, than it is to shift the whole boiler forward upon the base after you have it drawn together, as is the case when you start with the back section. The surfaces of the boiler which take the push nipples, and the push nipples themselves should now be thoroughly cleaned with a piece of old emery paper and then oiled lightly with good lard oil. Insert the push nipples and get the second section into place, being sure to so level it on the base that the holes are in exact line with the projecting nipples from the first section, and then catch the section upon the push nipples.

Assembling the Sections.

Place a 2x4 at the back of the second section and with a sledge drive it upon the nipples. The first section has been braced firmly in front with plank, so that it cannot fall forward. Then slide your rods through both sections and pull the sections together. This can be done in three different ways:

First, by having rods of different lengths to catch each additional section.

Second, by using the rods sent with the boiler, and making long troughs, or wooden washers which will cover the unthreaded portion of the rod which projects. This wooden washer will bear at one end on the face of the boiler, while the other end comes up to the threaded end of the rod.

Third, by obtaining some push nipple vise which may be very handily and conveniently used for this purpose.

Follow up this method with each section until all are in place upon the base, being sure that each section lines up correctly at the point of the push nipples, so that when the final pull comes, when the sections are drawn together, the sections will move in a straight line. If they do not, a cracked section may be the result.

Possibly you are using a different type of boiler upon this job, one connected up by means of headers, screw nipples and lock nuts. In such a case begin, as before, by setting up and bracing firmly the first section and then shift each succeeding section into place. Then put the lock nuts upon the nipples and the nipples into the headers, letting the first and last nipples of each header project about half an inch more than the others.

Raise the top header into place and catch the first and last nipples. Shift the remaining sections with a pinch bar until all the nipples on top are caught. Do not yet send them home.

Screwing the Nipples.

Catch both side headers in a similar manner, refraining from screwing up tightly any nipple. Then start at the front and give each nipple on the first section one or two turns. You are backing off on the long or running thread and screwing upon the other and pretty soon the nipple will bind; then pass to the second section, treating it in a similar manner; continue until you have been over the boiler once. Then start again at the first section. It may be necessary to go over the boiler in this manner several times before nipple ends which enter the sections are sufficiently tight. When you feel that these are sufficiently sent home, pack the lock nuts. Do not attempt to make up this lock nut joint with only one packing. Asbestos wicking is better. Oil it and wrap three or four turns around the nipple close to the header, and screw down the lock nut reasonably tight. Then unscrew the lock nut and add two or three (or possibly more) turns of the wicking, after which screw up the lock nut. These lock nuts will probably have to be tightened some when the boiler is fired up.

There are other types of boilers, among which is the vertical, coming in sections of the dome, one, two or three water rings, the fire pot and the base.

The Finishing Touches.

The base may be set according to previous directions. Roll the fire pot to the side of the base and tip it over into place. The rings generally are connected to top of the fire pot with one 6-inch screw nipple, which comes made into the rings. It is easier, in case you have no tackle, to lift the rings and rest them upon a barrel, by the side of the fire pot, and then make a second lift of the rings directly to top of fire pot.

Put a 2x4 into the door of the fire pot (to keep it from turning) and then screw down the sections by means of another 2x4 held in place by pieces of pipe caught in the flues. After the rings are made up, follow the same method with the dome.

This type of boiler can be set up (on

a cement floor) ready to run the mains in less than one hour, and "trimmed" at your leisure. Then apply the iron cement, thoroughly stopping up all the cracks between the sections of the boilers.

In all types mentioned the water glass should be so placed that when the water in the glass shows it to be half-full, this height will allow the top flues of the boiler to be covered with two inches of water.

Then put on the doors, blow off and damper regulator. This regulator should be so adjusted that the chain on the front end opens the front or draft door when the chain on the rear permits the check draft door to fall. It may be necessary to use pulleys in order to bring about this desired operation.

Now put on the gauge cocks, steam gauge, water glass and smoke pipe. Get out the necessary pieces of supply and return mains and connect them and make the necessary connection to supply the water.

Fill the boiler and look it over for leaks.

The Final Test.

If none appear and the rest of the system is ready, start a slow fire. At this point the boiler will begin to "sweat" and an inexperienced person will believe that there are about fifty leaks inside that boiler. "But not."

As soon as the water heats up this sweating will cease and after you have tested out the job thoroughly, blow off the boiler. Do this by getting up ten or fifteen pounds of steam with a light wood fire, which pull before starting to blow off. Then turn on the draw-off cock and let all the water and steam escape. It may be necessary to do this two or three times before the job is thoroughly cleaned from all the dirt, grease and chips which have accumulated inside the pipes, boiler and radiators.

The smoke pipe should be covered with wire netting and asbestos cement plastered upon it roughly. After this cement has dried, put on another coat and trowel it down smoothly. The boiler should be covered with cement put on in three different coats as described in a previous article.

The last coat may contain some Portland cement, which will give a much harder outer finish. After this is thoroughly dried, it may be painted and will then last for years. The remaining portions of the boiler should be painted frequently with black asphaltum paint.

The assets of W. R. McCallum, electrician, Ottawa, have been sold to McCallum & Co.

Cost of Heat From Central Plants.

Report of Inquiries Made by the N.S. Government as Given in the Heating and Ventilating Magazine.

In connection with the recent Government tests regarding the value of various fuels for house heating boilers, a general inquiry was made in the matter of central heating plants. The results obtained in this inquiry, when compared with the results of the tests on house heating boilers, show that such plants are economical for the house-holder, and that they solve a part of the smoke problem in the cities.

Inquiries were sent to all the known commercial steam or hot-water heating plants of the United States. This was done because the substitution of large units equipped for burning coal in the most economical manner in the place of small units of less efficient design offers one way of reducing the total quantity of smoke given off in burning a certain amount of coal, and in addition is a possible factor in conserving the nation's fuel supplies.

Inquiries were sent to 150 plants and replies were received from 57. The information gathered from these replies is to be published in detail in a bulletin now in preparation. Of the plants that answered 41 gave figures showing the price of heat to the consumer either per square foot or radiating surface or per 1,000 lbs. of condensed steam. The figures are presented in the accompanying table.

On a comparison of the figures showing the rate per 1,000 lbs. of condensed steam with those of cost for evaporating 1,000 lbs. of water, it becomes evident that considering all the factors concerned in the production of heat on the premises, such as cost of plant, depreciation, repairs, cost of fuel and labor, and the elimination of all discomfort from dust, ashes, or smoke, the house-holder is fortunate who can purchase heat from a central station at a reasonable price.

Table Showing Price of Heat.

State	Steam Per sq. ft. Cts.	Steam Per 1,000 lbs. Cts.	Hot Water. Per sq. ft. Cts.
Colorado	65		
Illinois	24		
Do		45	
Do	25		
Do	28		
Do	25		15
Do	22.5		17.5
Do			15
Do			20
Indiana			20
Do			18
Do			15.5
Do			12.5
Do			15
Do			17
Iowa			18
Do			20
Do			15
Do		50	
Minnesota		60	
Missouri		56	
Missouri			25
Montana	60		
New York		50	
Do		50	
Do		42.5	
Do		48	
North Dakota		60	
Do		40	
Ohio			15
Do			15
Do			20
Do			17.5
Do		50	
Pennsylvania	25		
Do		40	
Do	34		
Do	33.3		
Rhode Island		66	
Wisconsin			25
Do			25

USEFUL LEGAL NOTES.

A note by a minor is void.

It is a fraud to conceal a fraud.

Ignorance of the law excuses none.

Signatures in lead pencil are good in law.

Notes bear interest only when so stated.

Principals are responsible for their agents.

A receipt for money is not legally conclusive.

An agreement without a consideration is void.

A promissory note dated on Sunday is void.

The acts of one partner binds all the others.

Contracts made on Sunday cannot be enforced.

The law compels no one to do impossibilities.

A note obtained by fraud, or from one intoxicated, is void.

If a note be lost or stolen, it does not release the maker; he must pay it.

With Our Correspondents

The Editor does not hold himself responsible for the opinion of correspondents. Short, crisp letters will be appreciated. To insure publication, the name and address of the writer must accompany the communication, not necessary for publication. Sketches of work or methods will receive our earnest attention. These columns are open to our readers at all times without charge, and any questions or experiences will be given proper space.—Editor.

NOISE WHEN FLUSHING CLOSET.

I have installed a tank in attic to supply three closets fitted with flushmeter in a house job. Customer is annoyed, however, by having a singing noise in water pipes throughout house every time a closet is flushed the noise becoming worse just before the tank becomes full. How can I overcome this?

The fact that the noise increases as tank fills shows that the water is not shut off quickly enough Possibly the ball cock lever is too short as in order to have supply shut off quickly the lever should be full length of tank. Also you should have a three-quarter-inch ball cock.

A SOFT COAL BOILER.

Editor Plumber and Steamfitter,—Having seen the article in your issue of The Plumber and Steamfitter for April 1, under the heading of "Design of House Heating Apparatus," I wish to congratulate your paper on the introduction of this article through your columns, and trust that this subject will remain in your paper for further discussion, as this subject is a big one, and one upon which much work can be done. I trust that all men, who are connected in any way with the manufacture of house heating boilers, will not fail to come forward with any ideas that will help to solve this immense problem of burning of soft coal, as a unit of heat, for house boilers.

Surely there does not exist a manufacturer of house heating low pressure boilers that has not from time to time had calls for a boiler that will burn soft coal, and in this way had the question put to them. Will your boiler burn soft coal? The reply is always, "We do not guarantee our boiler to burn soft coal, or to do its rating, while using this kind of fuel." There is a reason why the boilers will not do their rated work while burning soft coal, but there is no reason why boilers cannot be designed to burn it.

Men who are familiar with the manufacture of house heating boilers, or rather, men who have fought with the immense problem of utilizing soft coal in this type of boiler, will tell you that this subject is one that requires a vast amount of time and money, to perfect a low pressure cast iron sectional boiler for house heating purposes to burn soft coal. But surely there is some firm on Canadian soil that is enterprising enough to tackle this work, and I trust that we shall soon be able to laud their name, for they will surely be deserving of all the credit that we can bestow on them.

The present type of boiler, we know, will not burn soft coal with any economy; so the subject presents itself, we must design a boiler on all together different lines, in order to give our people a boiler that will burn soft coal, and in this way enable them to take advantage of this cheap fuel. The total available power of hard coal, is about 12,000 B. t.u., and this power is also available in soft coal. so we have two different fuels with relatively the same heat power, but we are only using the hard coal, and why not soft coal, if we can make a boiler to burn it?

The problem of burning soft coal, is a problem of combustion. At first this seems like a simple one, but it is so simple that we disdain to tackle it. Chemists tell us that oxygen is the only direct promoter of combustion, and without oxygen we have no combustion. With this an established fact, they also tell us that it requires a certain amount of oxygen for a certain rate of combustion, this rate of combustion varying with the different kinds of fuel, also with the different types of boilers, as the differently constructed boilers have a great deal to do with perfect combustion. The transmission of heat is in direct proportion to the heat of the gases, against the heat of the water in the boiler, or the iron surrounding the fire. With the combustion of soft coal, we have a fuel that is violent in combustion, or slow in combustion, dependent, of course, on natural causes, or the amount of oxygen that is supplied to the fuel. In stages of violent combustion of soft coal, we find that the gases will not take up the proper amount of oxygen, to promote proper combustion, and this is the problem that confronts us. For if the gases will not take up the oxygen, we have the gases liberated from the coal, and passing up the stack unburnt, and we must acknowledge that this is a waste of coal, and money. In speaking this way, I have reference to the present type of boiler. The reason for this waste seems to the writer to present itself in this way. That in order to get proper combustion in soft coal we must first determine the zone of combustion, in a soft coal fire. As the means we are present employing is to admit the air over the fire as well as under the fire, to burn this fuel, this shows that we have not as yet determined the zone of combustion. For to admit air over the fire, only chills the gases, and in this way we lose their heating value. This zone of combustion is changed, of course, with the different depths of fire, so the problem is a large one.

The first problem we must consider is a boiler with ample coal capacity to take soft coal. As 50 lbs. of hard coal will cover a square foot of grate area, and 40 lbs. of soft coal is all that will go on a square foot area. So we must have a boiler that will take this extra 10 lbs. that will have to be put on, to equalize the heating values of the two fuels. Next we must get a boiler that will consume the smoke, and this brings into play a smoke consumer in connection with the boiler. And when we have constructed a boiler that will consume the smoke, I think that you will find that we will also have a combustion device. There are a number of smoke consumers on the market to-day, most of these devices being in use on high pressure tubular boilers, although there are a few that have been tried on house heating boilers. But manufacturers refuse to use them for fear that their boiler will not sell, on account of the excessive prices that they would have to charge, and the re-construction of the boilers that would be necessary to adopt these devices. Boiler men get busy, and construct a boiler that will be a smoke consumer and combustion device in itself.

PLUMBING TRADE PROBLEMS

Readers of the Plumber and Steamfitter, whether journeymen, master plumbers or plumbing inspectors, are invited to send the editor, (1) short letters, (accompanied by sketches where possible) describing some plumbing or heating problem met with in his daily work; (2) a description of some out-of-the-ordinary job done, or (3) some original method of doing any kind of plumbing or heating work.

For every such letter published the editor will allow one dollar (the price of a year's subscription) to the sender.

Every reader is also invited to send comments on any article or problem published in the paper. Our "Correspondence Page" is open to contributions or a discussion participated in by any one in the trade.

and you will have the key to this problem of utilizing soft coal. But we must have patience, as it is no easy matter, but I think that we will soon see such a boiler on this market, and do let it be a Canadian patent. This boiler, it would seem, would have to be designed to take the air in through the ash pit door, and not through the fire door.

A simple little device that any person can make and make cheaply is to get a piece of pipe six to eight inches in diameter, and long enough to extend from the grates, to a height over the fuel This pipe to be filled with holes, about one-quarter inch, and running in series the length of the pipe, or in series around the pipe. This pipe to be placed in the centre of the fire-pot and the coal filled in around it. This pipe to be made of fire-brick substance, so that it will not melt. When the fire is started, and the pipe has sufficient heat to burn the gases, you will find that you have a simple little smoke consumer, and combustion device combined. But in no way will it work unless the pipe is hotter than the gases. Let some one try this little device at their home, and report the workings of it to this paper, if you have your doubts. But as has been said before, the air must be taken in through the grates. You will find in trying this device that the coal will burn very rapidly, and will require re-coaling every three or four hours. But if your boiler is equipped with a regulator to control the butterfly door in the base door, you will find that the coal will last longer, as it will shut the door and check the fire when it gets too hot. But, alas, there are very few boilers in use in Canada with which a regulator is used, and the checking of the boiler must be done by hand, and this requires time and constant attention. You will also find that this little device, if you wish to call it such, will burn most everything, if you have your doubts, try sawdust and see for yourself. By mixing half hard coal and half soft coal, you will find it works very well, and will lessen the coal bill considerably.

A. L. MACDONALD.

Montreal, April 9.

NEW ENAMELWARE SHOW ROOMS

The accompanying illustration shows the re-arrangement made of the Amherst Foundry Co.'s show room and offices at 178 and 180 Victoria Street, Toronto, by A. J. Jackson, sales agent for Ontario. Formerly the offices were near the front with warerooms behind, but new warerooms have been secured on the floors above and in the rear, this making it possible to transfer the offices to the back of the showroom and make a fair display of the varied lines manufactured by the company at their plant at Amherst. These include, as will be seen, a full line of bath tubs, pedestal and wall lavatories, flat and roll rim sinks, range closets and laundry tubs.

Amherst Foundry Company's New Display Room at Toronto for Beaver Brand Enamelware.

The property committee of the county council at Lindsay decided to accept the plans and specifications of a new central heating system for the jail, court house, and registry office, furnished by J. M. Miller & Co., of Toronto. Tenders will be asked for at once and the work will be proceeded with as rapidly as possible.

Andrew Carnegie has offered to donate $75,000 to the public library board for the erection of a new building for the Hamilton library on condition that at least $100,000 is spent on the erection of such a building.

Mr. Jackson, who is shown at the back of the picture, is enthusiastic about the growth of the "Beaver Brand" enamelware business in Toronto and throughout Ontario, the volume last year being four times as great as in 1906 or 1907, and, in their supply business, have orders booked ahead for over 250 houses.

Building blocks planned for construction at Victoria are the Royal Bank of Canada; the B. C. Land Investment Co., a three storey building to be fitted up for stores and offices; and Cameron & Calwell.

Storage of Water for Domestic Purposes

Extracts From a Paper Read by H. G. Turner Before a Meeting of the Institute of Sanitary Engineers of England

Water for domestic uses is arranged in the list given below, according to palatability and wholesomeness. Wholesome: (1) spring water, (2) deep well water, (3) upland surface water, very palatable. Suspicious: (4) stored rain water, (5) surface water from cultivated land, moderately palatable. Dangerous; (6) river water to which sewage gains access, (7) shallow well water, palatable.

Spring water takes the most prominent position in the list already given but it must not be supposed that it is necessarily pure, as numerous instances are recorded of contamination from far sources through percolation.

Intermittent springs are practically valueless for a water supply, as they absolutely depend on recent rainfall, and being of the same nature as shallow wells, their yield is to be regarded with suspicion.

Constant springs are the outcrop of vast subterranean accumulations of water. Where the water has to pass through a chalk formation until held up by the green sand below it contains large quantities of carbonate of lime, this being held in solution by the excess of carbon dioxide acquired by all spring waters in their passage through the superficial layers of the soil, which contain some 250 times more of this gas than the atmosphere. The carbonate of lime causes temporary hardness, which may be overcome by precipitation of the carbonates through boiling or by Clark's process of adding 1 oz. of quicklime to each 1,000 gals. of water for every degree of hardness. A degree of hardness is measured by the quantity of carbonate of lime (common chalk) in a gallon of water. 1 grain representing 1 degree of hardness.

Sources of Spring Water.

Oolite springs are the outcrop from sources deeper than the chalk, and give pure but hard water, the difference when compared with chalk springs being in the existence of sulphate of lime and magnesia as well as carbonates, the combination forming permanent hardness—i.e., hardness not removable by the methods mentioned.

Soft waters have been classed as waters up to 6 degrees of hardness, hard waters, over 6 degrees of hardness. Soft water uses less soap, is more economical for cooking and other domestic purposes, leaves less "fur" or "scale" after boiling in utensils or boilers, and is much preferred in the manufacture of bread, porter, stout, etc. Hard water has no action upon lead (or seldom any, but all waters should be carefully tested for their action upon metals). It is indispensable for the manufacture of pale ales, and it encourages the collection of rain water for domestic purposes, thus effecting a considerable economy in the public supply. Springs from magnesian limestone formations yield a pure and plentiful supply of permanently hard water.

It is seldom that springs are of sufficient magnitude to serve a village, but they are a most useful and satisfactory source for farmhouses. The position of the outcrop is of the utmost importance. Should it be at a higher level than the building it is proposed to supply and well away from any source of contamination, the conditions are very favorable, and the water may be conducted to the premises by gravitation. Naturally the outcrop is usually situated below the dwellings, unless the latter are at a very low level indeed, and then, owing to the dip in the various strata, there exists the probability of the spring being polluted by the refuse from the house it is intended to supply. With a low outcrop the problem of transportation presents itself.

Methods of Raising Water.

Hydraulic rams provide a very simple and inexpensive means of raising water, in fact, the cheapest method known. When properly designed and fixed they are more efficient than turbines or pumps, an efficiency of over 80 per cent. having been obtained. A simple method of calculating water raised is to add two naughts to the number of gallons available per minute and call it gallons raised 100 ft. high per 24 hours.

For lifts up to 27 feet hand suction pumps are valuable, and a hand force pump may be used for higher lifts to raise the water to a tank on the roof of the house. The spring should be excavated to form a reservoir, the sides built up with bricks in cement backed with puddle, a suitable overflow and cover provided, and the whole spring fenced in. All this can be done for a small outlay, and it insures a good supply for a limited population.

The variation in the character of spring water from chalk, oolite (mountain limestone) and magnesian limestone formations is equally present in wells, which are simply artificial springs dependent upon rainfall, about one-third of which penetrates the various formations until held up by an impermeable stratum, over which it flows until a river or sea is reached.

Of the three kinds of wells—surface, deep and artesian—surface wells may be subdivided into three: Dripping, draw and pump wells, the difference being simply in the depth at which water is found, necessitating various methods of obtaining the water as indicated by the names. They are supplied by water held up by the first impervious stratum, and the supply is therefore mixed with water from cultivated lands, farmyards, cesspools, etc., and is seldom pure. Its existing pureness, if found, may be destroyed at any time by the cultivation of an adjacent plot of land, etc., Such wells are a very common source of supply to isolated dwellings, but should not be adopted where any other source is available, and in any event should be subjected to a constant and strict inspection.

Water From Deep Wells.

Deep wells lie under the stratum supporting shallow well water, and their contents are not subsoil water that has simply percolated from the surface, but water that has filtered through porous ground at a higher level, and to obtain it the first impervious stratum must be pierced and the water raised by a force pump. These wells are probably the most suitable sources for small communities. They are usually, but not necessarily, over 100 feet in depth, and should be lined with steel tubing, or brickwork in cement with a clay puddle backing from the surface down to below the first impervious stratum to keep out subsoil water, and, of course, as far below this level as may be necessary for the support of the walls. The supply can be often much augmented by driving headings from the well into the water-bearing strata, as this increases the well capacity, and often connects new water veins with the well. Suction pumps are valueless for extracting water from deep wells, as their theoretical lift is only 33.8 feet. Force pumps must, therefore, be resorted to.

Artesian wells are formed by boring through the first and second impermeable layers—that is, through shallow and deep well levels—into porous strata, which is depressed in the shape of a bowl; and, being underlaid and overlaid by impermeable strata, and having its catchment area at a high level, naturally contains water under considerable pressure, with the result that the outcrop at the well is often below water level, and in any event the water rises to a high level in the bore.

It is seldom that artesian wells are suitable for the supply of rural districts, as their cost and supply are very doubtful matters. One such well at Greville, France, took seven years to bore, at a cost of $70,000.

NEWS OF THE TRADE IN CANADA

The assets of M. Greenberg, Montreal, have been sold.

Cleo. Langhan & Fils, plumbers and steamfitters, Quebec, have suspended business.

Contracts are to be called for shortly for a 140 apartment house by Architect Mather, Ottawa.

J. C. King, of Warden King, Limited, Montreal, spent several days in Toronto this week.

K. J. Allison, master plumber, Toronto, who has been ill with pleurisy, is around again.

Bennett & Wright have a $1,520 contract for plumbing in the enlarged Kent school, Toronto.

S. A. Pottiearry, St. Thomas, has secured the plumbing and heating contracts for the Engineers' building there.

J. J. Bouchard, secretary-treasurer of the Star Iron Co., Montreal, was in Toronto several days during the present week.

Keith & Fitzsimmons, Toronto, have the plumbing contract for the addition to the Riverdale High School, that city, at $885,

The Nova Scotia Government has awarded to Longard Bros. the contract for heating the Technical College at Halifax.

H. W. Munday, of 13 Bleury Street, Montreal, is moving to more commodious premises at 28 Jurors Street, on the 1st of May.

J. F. Dewar, who is to represent the J. L. Mott Iron Works, New York, in Toronto, has secured offices at Room 12, 34 Yonge Street.

A. Fulton, Enderby, B.C., reports big business in the plumbing line in his town. He has four men employed, with six weeks' work ahead.

The Standard Sanitary Co. are altering the Somerville, Limited, plumbing supply warerooms at Toronto, recently purchased by the Pittsburg concern.

John Colbert, plumber, Victoria, whose business was recently destroyed by fire, has opened temporary quarters on the corner of Broughton and Douglas Sts.

The plumbing and lighting in Peterboro's new armories were done by F. R. J. MacPherson, of that city. Bennett & Wright, Toronto, installed the heating.

Fred Stork, ex-mayor of Fernie, is now in the plumbing business in Prince Rupert. He visited Vancouver recently and reported having all he could do at the new terminus.

Wood, Vallance & Co. secured the contract from Hamilton for supplying 800 feet of six-inch wrought iron pipe for the connection between the city sewer and that on the mountain.

L. L. Anthes, of the Toronto Foundry Company, Toronto, has left for Manitoba, where he will book orders and shoot wild duck for a fortnight or more.

W. M. Mackay, secretary of the American Society of Heating and Ventilating Engineers, New York, was a recent visitor at Montreal, where he has a connection as a consulting engineer.

Knox Brothers, plumbers and steamfitters, Ottawa, will on May 1 remove from their present stand on Bank Street to the corner of Waverly and Elgin Sts. Ottawa is rapidly growing in that direction.

The "Vosper" pipe cutter was referred to in the Plumber and Steamfitter of April 1, as the "Vasper" owing to a misprint. It is manufactured by Macdonald & Sons, 128 Craig Street West, Montreal.

Jack Birchard, recently with the General Brass Company, Toronto, is back with his old love, the King Radiator Co., and is now covering western and northern Ontario, in place of J. C. Wilson, now calling on the trade in Toronto.

Lots of small jobs seems to be the general forecast of building conditions at Brantford. During the past week, permits have been issued for a large number of houses ranging from $600 to $2,500. The plumbers feel much elated over the prospects for the season.

About 270 master plumbers' licenses have been taken out so far this year and the number will easily run over 300 before the year is out. Last year, as a result of the strike, the number was about 375. Up till a couple of years ago 150 was a record figure.

Acting for the John Ritchie Plumbing and Heating Co., Toronto, Alexander Macgregor, of that city, has entered action against the trustees of the Presbyterian congregation of the Church of the Covenant, on Avenue Road, to recover $1,064.17, balance alleged due on a contract.

Currie & Livock, master plumbers, Ottawa, have been remodelling their shop and now have a well equipped office with a marble top table and a private telephone exchange connected to all departments. The firm have also been conducting a campaign in favor of the city of Ottawa establishing one or more public comfort stations.

It is said that an adventurous firm of Ottawa plumbers are preparing to spend May 24th on a motor boat up the Ottawa river. They say they intend taking a good supply of gasolene along, but invited guests will feel safer if they take a bottle along for use in case the supply runs out and the party becomes stranded on a desert island.

By grasping a water pipe that was charged with electricity, George Barron, a Guelph plumber, had a current of 104 volts pass through his body. He could not let go and a fellow workman who went to help him was dashed to the ground. Another man jerked him free from the water pipe.

A practical joker got busy on April 1 at Winnipeg and mailed each of the master plumbers of that city a post card with the following: "I will be pleased to receive a tender from you for the plumbing and steam heating of a building on the corner of Portage Ave. and Arlington St. If you will meet me there between the hours of ten and eleven Thursday morning I will show you over the building. Signed, A. F. Codd." As a result the cars carried several plumbers westward looking very happy in their anticipation of a nice little job with very little competition, but on their return homeward their faces bore a very subdued look, for they found the only building on the corner was the street railway waiting room about eight by six feet.

A bill has been introduced in the Nova Scotia House of Assembly to incorporate the Master Plumbers' Association of Nova Scotia. The bill sets out that it is desirable that those named and others who may hereafter be associated with them be incorporated into an association, having for its objects and purposes the following; Promoting the advancement of the trade in its sanitary, commercial and scientific departments. Protection against imposition, injustice and encroachment upon its common rights and interest. The education of its members and the improvement by its members of the plumbing trade generally. The dissemination, among the people, of sanitary science and its principles, and the mutual assistance of its members.

The new plumbing by-law which will be shortly considered by the Vancouver city council is based on the open-shop principle as regards the city's relations with plumbers. Under the present by-law, provision is made for the examination of persons desiring to be registered as plumbers by a civic board of examiners, and parties engaging in the trade as master plumbers must be possessed of a city license and pay an annual fee to the treasurer. The new regulations will do away with these licensing provisions entirely, and merely stipulate the standard of work which must be maintained in plumbing in the city, leaving it open to any man to perform the work, providing he does it to the satisfaction of the plumbing inspector. The only examination as to proficiency mentioned relates to the inspector and his assistants, who must pass a satisfactory examination.

CONTRACTS AND BUSINESS OPPORTUNITIES

Municipal Undertakings.

New sewer work has been commenced at Brantford.

The Guelph waterworks system is almost completed.

work at their factory just now.

The McLeod Pulp & Paper Mills have

A $1,250 sewer will be constructed on Dundas Street, Woodstock.

$20,000 will be spent for waterworks extensions at Fort Frances, Ont.

The Edmonton city council has passed a by-law authorizing the expenditure of $40.000 for sewer improvements.

The Alberni Waterworks Company has been incorporated to supply water for domestic uses to the town of Alberni, B.C.

The Calgary city commissioners are calling for tenders or estimates for valves, connections and hydrants for the season's work.

Stratford is considering instaling septic tanks in connection with a new sewage disposal plant similar to that at Columbus, Ohio.

At a recent meeting the Glace Bay, N. S., water committee recommended that $7,000 be borrowed for repairs to the town reservoir.

Montreal's new waterworks system is expected to be completed in three months' time. Another million dollars will be raised to finish the work.

Dr. Sheard, Toronto's medical health officer, has recommended to the Board of Works that two crematories be erected in that city at a cost of $90,000 or $100,000.

The Toronto city engineer's department will require $190,000 to extend the city water service along St. Clair, Danforth, Riverdale and Carlaw Avenues, and along Gerrard Street East from the present terminus of the existing main.

Engineer Burwell has outlined to the Vancouver civic water committee a proposal for the extension of the waterworks system, including the construction of the Little Mountain reservoir, and its connection with the Seymour mains.

Chesley, Ont., has a new waterworks system that is said to be one of the most modern in Canada for the smaller towns. The supply is from artesian wells and the power is secured from a producer gas engine. Though only a town of about 2,000, Chesley boasts of a sewerage system as well as a modern waterworks plant.

A by-law is being prepared and will be presented for the approval of the ratepayers of Oak Bay municipality to raise $50,000 for the water distribution, an agreement having been come to with the Victoria city council to supply the water at the city boundary. Tenders are also being called for the construction of sewers.

The Winnipeg civic board of works have granted the request of the National Transcontinental Railway for permission to lay a sewer emptying into the Red River. The length of the outlet is about 400 yards and it will cost $20,000. The cost of the sewer, five miles in length, which will be laid by the commission to the shops at Transcona, will be about $170,000.

Public Buildings.

A new city hall is proposed for London.

A new library will be erected at Calgary.

The building outlook at Ottawa is bright.

A high school may be erected at Duncan, B.C.

A new public school is proposed for Windsor.

A public school will be built at Richibucto, N.B.

A public hall will be built at Grandview, B.C.

A new school will be erected at Ville Emard, Que.

The building trade is reported brisk at Kingston.

Knox Church, Peterboro, will build a new edifice.

A $10,000 separate school will be built at Prince Albert.

A Carnegie library will be erected at Preston shortly.

A new school will be erected this year at Revelstoke, B.C.

A fireproof hospital building will be built at Lethbridge.

A new hospital is proposed to be built at Nelson, B.C.

A new public school will be erected at Port Granby, Ont.

Flesherton, Ont., ratepayers propose to erect a high school.

$40,000 will be spent on an addition to Victoria Hall, Toronto.

A $7,000 Lutheran church will be built at Fort William.

At Nanaimo, B.C., a large amount of building is being done.

A new Roman Catholic church will be erected at Mt. Pleasant, B.C.

A new exhibition building will be erected this season at Collingwood.

An eight-room public school building will be erected at Haileybury.

The Y.M.C.A. are thinking of putting up a new institute at Victoria.

The C.P.R. will erect a new station at Welwyn, Sask., this spring.

It is preposed to erect a new Anglican church at Ottawa this season.

A six-room addition will be made to Stratford's Collegiate Institute.

The University of Toronto will erect a building for the Faculty of Education.

Tenders are being received for the new Vancouver Board of Trade building.

A new post office will be erected this spring by the Government at Elmwood Man.

A $75,000 library will be built at Toronto as an addition to Victoria College.

Tenders are to be invited for the erection of Essex County Asylum at Sandwich.

At Quatsino a new hotel is to be built. About $8,000 will be spent on the structure.

A site has been selected for the proposed new Mount Forest, Ont., post office.

A number of small residences for workmen will be erected at Smith's Falls.

A. M. Terrill has commenced the erection of a new $5,000 greenhouse in East Calgary.

The refinery at the Royal Mint, Ottawa, will be completed at a cost of $30,000.

A modern school building may be erected at Chipman, Alta., at a cost of $15,000.

A new city registry office will be erected at the rear of the City Hall, Toronto.

The Presbyterian building committee will secure plans for a new church at Winnipeg.

The city hall at Sydney, C.B., will be remodelled. A new fire hall will also be erected.

The Methodist Social Union have selected a site in Ottawa East for a new church.

Another wing may be added to the General and Alexandria Marine Hospital, Goderich.

Preliminary sketches are being prepared for a new school building at Dresden, Ont.

The contract for the Fort Erie, Ont., new public school has been awarded to Edgar Burgar.

The Bell Telephone Co., St. Thomas, are getting out plans for a building to be erected there.

The Central Congregational Church Winnipeg, are considering the extension of their building.

A site has been secured in the north end of Vancouver by the Hindus for the erection of a temple.

A new school section has been formed at Cumberland and a building will be erected this spring.

The city engineer at Moncton is calling for tenders for converting the opera house into city offices.

A national tower to commemorate the birth of British Government in Canada will be built at Halifax.

The public works department has purchased a site for the erection of a public building at Uxbridge.

A stone school house costing $2,100 will be built in the village of Chamberlain, Sask., this spring.

Grants have been made amounting to $300,000 for a new wing to the Parliament Buildings, Toronto.

The erection of a new drill hall at St. John is now assured. A site will be acquired this season.

A fine radial station is proposed to be built by the Brantford and Hamilton Electric Ry. at Brantford.

Plans are being prepared for the erection of a new Anglican church at West Burnaby, near Vancouver.

The Salvation Army are thinking of putting up a new building at a cost of $5,000 at Woodstock, Ont.

The Kenora, Ont., town council is negotiating for the construction of a court house in that town.

F. T. Burgess will erect a moving picture and vaudeville theatre at Toronto at a cost of about $20,000.

It is stated that the Lutheran church are contemplating the erection of a new building at Woodstock, Ont.

Building operations in Edmonton are in full swing. Permits already taken out are far in excess of last year.

City Architect Nutter, of London, is busy at work on the plans for the additions to the Wortley road school.

Tenders will be called for shortly for the erection of a new public library to be built this summer at Peterboro.

Tenders are being called for a new school to replace the one known as White's schoolhouse near Brantford.

The Winnipeg Paint & Glass Co. will add this summer three additional storeys to their present warehouse at Calgary.

The St. Thomas Board of Education is asking for $3,218 for repairs to various school buildings during the current year.

The Winnipeg Horse Show Association has had plans prepared for a large amphitheatre to be erected in the near future.

Dresden, Ont., will submit a by-law to the ratepayers authorizing the expenditure of $20,000 on a new public school.

Leslie & McNeil, St. Mary's, Ont., have been awarded the general contract for the erection of the new post office at Leamington.

It is reported that $250,000 has been bequeathed with which to erect a building at Toronto to be known as the Burns Memorial.

Tenders will be called this week for alterations and improvements, totalling about $5,000 at the County Court House, Brantford.

The Bank of New Brunswick a couple of years ago built a branch office in the north end of St. John, and will build a branch in that city.

Building operations promise to be brisk again in Halifax this season, and work has already been started on sev-large large contracts.

Tenders are invited by C. M. Borter, Niagara Falls, Ont., for the construction of a four roomed brick school building at Stanford, Ont.

The congregation of St. Matthias have decided to proceed with the construction of a new church at Westmount, Que., at a cost of $25,000.

A new theatre is to be built at Victoria. A syndicate has been formed and a site has been decided upon. The building will cost over $100,000.

Chas. Pasternack and Simon Rabinovitch will remodel, for theatre purposes, at a cost of $15,000, the old Agnes Street Methodist church, Toronto.

Mayor Robinson, of Kamloops, B.C., has presented to the City Council a scheme for the erection of a new city hall and the carrying out of other public works at a total cost of $100,000.

Andrew Carnegie has agreed to donate to the village of Milverton the sum of $7,000 for the erection of a public library building, with music hall, providing the village will supply a suitable site.

Park Baptist Church, Brantford, contemplate improvements. A new basement Sunday school room will be put in, and the interior of the church will be changed. A new parsonage will also be built.

The new six-storey block to be erected by Pemberton & Sons, at Victoria, is to be a very fine structure. When completed it will be the finest office structure in Victoria and will cost about $200,000.

Building permits have been issued at Calgary to J. A. McPhail for a residence to cost $1,700; Geo. W. Rae, $1,700 residence; F. Vickers; J. A. Kneoppfle, Wm. Scott $1,800 residence, and to F. X. Stahle for a three storey double residence.

E. LeRoy Wills announces the formation of a syndicate of prominent Montreal and Sydney capitalists, with capital of $150,000 for the purpose of enlarging and reorganizing the Sydney, C. B., hotel. Salt water baths will be installed.

The erection of a large brick and concrete addition to George Sparling's block, at Saskatoon, will shortly be commenced, while a large central site has been purchased by the A. Carruthers Company, who will build in the near future.

Faulkner & McDonald, Halifax, have commenced work on the $30,000 addition to the Academy of the Sacred Heart, and Contractor Lounds is now putting in the foundation for the new brick building to be used as a children's hospital.

The Saskatoon high school board have purchased 3¼ acres of land for a site on which to build a collegiate institute. It is the purpose of the board to erect a $100,000 building this year. The public school board will also have to extend their premises, while plans are out for a new school in Nutana.

Building operations will be active and extensive in Calgary this year. J. McLeod has applied for a permit to erect a four-storey business block, and expects to commence building operations at once. G. H. McCaskill will build a $3,000 residence; E. H. Crandell a $2,000 residence and work has commenced at Calgary on a business block for Thurber and Giles.

The busiest office in Winnipeg is that of the building inspector and the buildings planned or commenced on Portage Avenue alone will pass the three million dollar mark, including the twelve-storey block for the Grand Trunk Pacific. Agents of Lord Northcliffe, who already is heavily interested in Winnipeg property, have received $625,000 from the millionaire publisher for investment.

Work has been going on steadily at the Parliament Buildings, at Edmonton, and at the post office. It is expected the latter building will be completed in June. Work has started on Hallier and Aldridge's new warehouse, which will cost $35,000. Pheasey & Batson have been awarded the contract for the Edmonton Iron Works new building, contract price $35,000. The same firm have also secured contract for Dr. McLean's business block, valued at $35,000. Work has started on the John Kelly block, contract price $30,000.

General Building Notes.

London's building permits average 25 weekly.

A Y.M.C.A. building will be erected at Nelson, B.C.

Scott Griffin will build at Toronto a $14,000 residence.

W. D. Tummis, Toronto, will erect a $18,000 residence.

Ottawa's building permits last week totalled $30,900.

J. J. Downey, Toronto, will erect a $12,000 block of dwellings.

Scott & Mackay, Toronto, will erect a $11,000 block of dwellings.

R. N. Baldwin, Saskatoon, will erect a three-storey tenement block.

Grand Forks, B.C., reports building construction there very active.

R. J. Mattice will build a $200,000 apartment block at Winnipeg.

The Winnipeg Golf Club contemplate the erection of a large club house.

The Canadian Northern Railway will build a $250,000 hotel at Port Arthur.

A new depot will be erected at Indian Head this summer at a cost of $17,000.

A. E. Playter will build a $20,000 public hall and business block at Toronto.

Stewart & Raymo, Toronto, will build an apartment house to cost $25,000.

Queens Avenue Methodist Church, New Westminster, will erect a new parsonage.

Henry Nixon will build at Toronto a row of stores and dwellings to cost $16,000.

The licensees of the Sherman house, Vancouver, will erect a four-storey structure.

Building permits are being granted at present at Vancouver at the rate of ten per day.

Elgie & Page, Toronto, have the contract for a $10,000 residence for W. M. McLaughlin.

The Y.W.C.A. are stated to be planning the extension of their building at Vancouver.

The Bank of Hamilton will erect a new bank building at Kamloops, B.C., to cost $30,000.

The Union Bank have purchased a site at Brandon for the erection of their new building.

J. H. Russell, Winnipeg, has just taken tenders for a new residence for J. J. Windrum.

The Bank of Montreal are contemplating the erection of a new bank building at Fredericton.

Alderman R. C. Vaughan, Vancouver, will build 24 houses in the north end of that city this season.

Jas. Morisen, Montreal, has the general contract for the erection of a $25,000 residence for R. B. Angus.

J. A. Powell, Edmonton, has taken out a permit for the erection of an office building to cost $12,000.

G. E. Williamson, Vancouver, has obtained a permit for the erection of an apartment house to cost $20,000.

W. C. Barnes, Moncton, N.B., has prepared plans for a store to be erected for R. N. Wyse at a cost of $10,000.

Northwood & Noffke, Winnipeg, have plans under way for several residences, the average cost of which is $10,000.

Wm. Wallace Blair, Winnipeg, has prepared plans for a six-storey and basement brick building to be built there.

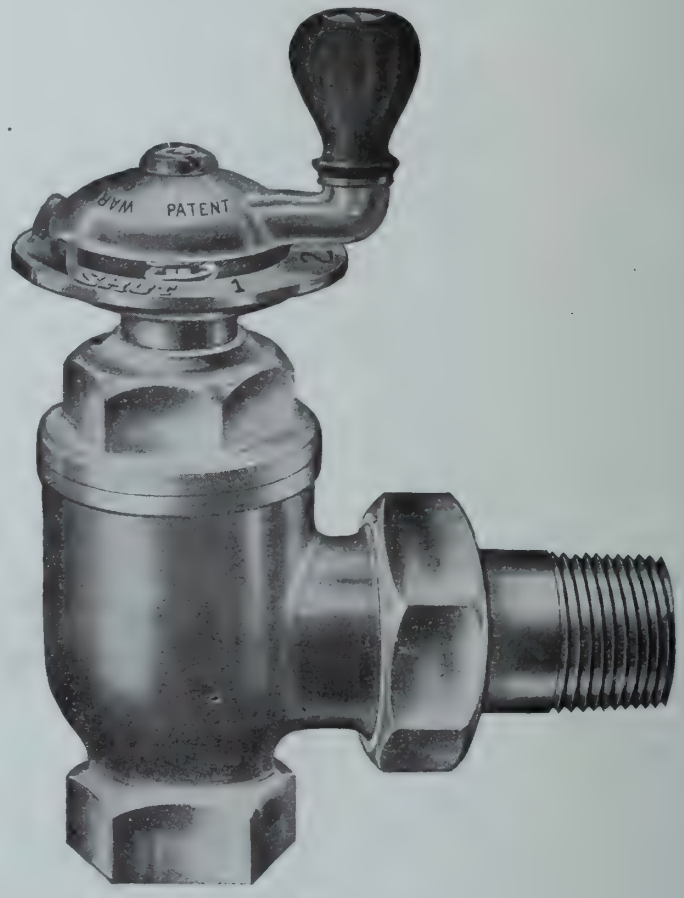
Hall & Son, Toronto, have the contract for a $16,000 apartment building to be erected there for Thos. McIlwain.

Building Inspector Rodgers, Winnipeg, estimates the amount of building to be done in that city this year at $8,000,000.

WEBSTER MODULATION VALVE.

A simple, but most effective valve has been placed on the market by Warren, Webster & Co., Camden, N.J., whose Canadian agents are Darling Bros., Montreal, to act in conjunction with their new modulation system. This valve, as can be seen from the cut we herewith publish, is most easily operated and adjusted. Instead of a cumbersome wheel arrangement there is a small handle which can be easily grasped and with the marking off of its circle of action into pressure sections, there is no difficulty in regulating the heat, and maintaining any desired temperature in a room.

The Webster modulation system is a new method of circulating steam at low pressure, and provides a satisfactory heating system for small and medium sized buildings. In principle the Webster modulation system is essentially the same as the Webster system of steam circulation except that no pump nor other exhausting apparatus is necessary. The differential between the supply and return lines is maintained as usual by the Webster water seal valve, and the return piping being vented to the atmosphere there is never more than atmospheric pressure therein. The return water is separated from the air and gravitates to a low point on the system from whence it is returned to the boilers automatically. In the operation of this system the Webster modulation valve plays an important part. One is placed at the supply end of each radiator or coil, and enables any desired temperature to be maintained.



Webster Modulation Valve.

PLUMBING AND HEATING MARKETS

MONTREAL.

April 14.—A bright tone is observable among the supply houses. A marked spring movement is now showing, and all lines have improved. The fact that the permits for March were numerically greater and of higher value than for the same month for the two previous years, and that April has opened out even more encouragingly, has given the needed stimulation to trade generally, and inspired confidence as to the future. Architects are still as busy as they can be, and some large contracts are likely to be placed shortly. There is, however, no doubt as to a big boom in residential houses and flats. Outside districts are also reported to be preparing for a good building season, and users of materials are commencing to stock up for the work. The early opening of lower ports on the St. Lawrence has tended to quicken trade, and jobbers are satisfied with the way things are shaping. Soil pipe, lead pipe and solder are moving very strongly.

Plumbers generally are busy. Many flats worked on during the winter are being rushed for occupation on the 1st of May, while jobbing work is also very free at present. Plumbers generally are anticipating a good year, especially if not too much cutting is indulged in. The markets are firm, with little change. Solder has advanced 1c for smaller quantities, but average lots can be obtained for the price we have hitherto been quoting.

SOIL PIPE—Soil pipe is now in strong demand. Good orders are going out in all directions, while heavy bulk is awaiting shipment on opening of navigation. The local trade has improved considerably, and everything is in good shape. There are no changes in discounts, and we quote: Light, 3 to 6 in., 60 off; medium to heavy, 2 to 6 in., 70 off; 8 in., heavy, 40 off.

LEAD PIPE—Lead pipe is now moving with a good swing. Users are putting in stock so that they shall be ready for the first call of what promises to be a record season. So little pipe has been held that a strong and steady demand is promised the supply houses. There is no change in prices, and we quote; Pipe and waste at 27½ off; traps and bends at 50; calking lead at 5c per pound.

SOLDER—With lead pipe, solder has received strong stimulation during the last few days. Good jobbing work has helped the sale. The market is much firmer, and prices for small quantities have stiffened 1c. But for fair-sized lots the prices of 19½c for half-and-half, and 18½c for wiping still obtain.

IRON PIPE—Business is showing the spring movement and good assorted orders are coming in. The city trade is good, while heavy bulk is waiting shipment at the opening of navigation. The market is fairly steady, and we continue to quote discounts from ¾ in. to 4 in. black, 72½ off; galvanized, 62½ off.

ENAMELWARE—Jobbers report good business, with supplies in much better shape than they were. Manufacturers are still extremely busy on contracts, although fresh orders for the time being are somewhat quiet. Prices are well maintained on high grade lines.

RADIATORS AND BOILERS—The low prices seem to have stimulated trade, and business is good for the time of the year. We quote radiators and boilers at 60 off. Steamfittings are now about 70 off.

METALS—The markets have fluctuated a little, but generally prices are unchanged. Easter made trade quieter. We quote: Ingot copper, 14c; ingot tin, 32½c; lead, $3.85; pig iron, Middlesboro No 3, $16.50 to $16.75; Summerlee, $18,75. Heavy scrap red brass is 10c; light copper, 10c; heavy lead, 2¾c.

TORONTO.

April 14.—Trading in plumbing supplies is booming just now, more particularly during the passing week. City business continues to be the best, but the other centres in western Ontario have become good buyers, and the country is opening up well. The eastern and northern sections of the province were slow up to the beginning of April, but some activity is becoming evident now.

Prices are unchanged on all lines, but soil pipe is expected to show firmness, and radiation too, is expected to go back to the quotations prevailing before the cut. Manufacturers of these lines have been discussing the situation as regards prices, as well as importations of United States soil pipe, and it is likely that all sales figures in these two lines will show advances. Already the market is firmer. We expect to give the new and advanced quotations in our next issue.

ENAMELWARE—The Standard Sanitary Co. of Pittsburg, having entered the Canadian field in earnest, before long the trade in Ontario may expect to see United States lines of enamelware offered for inspection and sale. At present the Canadian manufacturers report splendid business, especially in baths and closet combinations. Sinks, too, are moving well. The firmer prices quoted in the last issue continue to be the market figures.

BOILERS AND RADIATORS—Radiators are yet at the cut figure of 60 per cent. It is likely, however, that the trade will shortly go back to the quotations prevailing before the lists were recalled and the prices cut. The only reason they do not go into effect immediately is because so many orders were booked at the low prices. Heating goods are being shipped now in increasing quantities. Many boilers which were held for future delivery, though ordered at the beginning of the year, are being moved out. While booking continues for futures a greater number of orders call for immediate delivery. This applies not only to city business, but also to the smaller towns. This year is expected to be the banner year in Canada for the selling of heating lines.

SOIL PIPE—The changed discount from 60 to 70 per cent. which was made about a year ago evidently did not induce as much buying as was thought it would. A great deal of U. S. pipe at cut prices has been offered at various places in Ontario and in some cases has entered into competition for sales with the native product. Now that building prospects are bright again and trade seems to be resuming its normal course, manufacturers think it is time to do something to keep out the cheap foreign pipe and at the same time induce Canadian makers to do away with the reaching for orders at cut prices. It is, therefore, likely that the market will soon show firmness, and possibly the price be advanced.

IRON PIPE AND FITTINGS—These lines are going out well, and the low prices prevailing have helped on trade wonderfully. Black and galvanized pipe for roughing-in are ordered in increasing quantities daily, and malleable pipe and fittings are sympathetically active.

BRASS GOODS—Increasing demand is made for all brass goods and jobbers report satisfactory business conditions prevailing. Prices are unchanged.

Lead pipe, solder and oakum are at unchanged quotations. Solder is in splendid demand.

The building season at Brantford promises to be a brisk one. Within a radius of six miles of Brantford several schoolhouses will be erected as well as a number of modern farm houses with every convenience. In the city, although there will not be many very large buildings erected, yet there will be a good deal of work. Colborne St. Methodist Church has decided to expend $14,000 in enlarging the present edifice Park Baptist Church will also make extensive alterations and additions.

TRADE NOTES.

It is understood that Stopes & Fuerstman, Saranac Lake, N.Y., are preparing plans for the erection of two sanitariums, one at St. Agatha, and the other at Quebec.

Preparations have begun for the building of about 40 semi-detached brick houses at Carlton, near Toronto. The cost of the undertaking will exceed about $50,000.

An eight-storey apartment house is to be built at Ottawa. It is said that Hon. William Pugsley, Minister of Public Works, and several Montreal capitalists are behind the venture.

The contract for the erection of the head office of the Royal Bank of Canada at Winnipeg, will be awarded shortly and the work of construction commenced as soon as weather permits.

Jos. Sawyer, Montreal, has prepared plans for a three-storey building to be erected there for F. Harel. It will have electric lighting, open plumbing, hot water heating and metal ceilings. Cost of building, $55,000.

Building permits are being issued by the London engineer's department at the rate of twenty-five per week, and the indications are that the coming season will be one of the busiest in the building trades in the city's history.

Building permits have been issued at Victoria by the building inspector to Samuel W. Easton, dwelling, $2,400; Mrs. S. M. Trimen, dwelling, $2,800; Luney Bros., dwelling, $2,400; Alexander McCrimmon, dwelling, $3,000; F. H. Tubbs, dwelling, $800.

Tenders are being called for the erection of a five-storey and basement block by the Victoria Times Printing and Publishing Co. to be used entirely by the company in the printing and publishing of their paper. The new building will be among the finest in the city.

Building permits have been issued recently at Ottawa to the following: Charles O'Neil, $2,500; James H. Wilson, $4,000; G. O. Serfert, laundry, $5,000; S. J. Davis, $3,200; John Fisher $500; M. L. Nimmo, $3,200; E. S. Cooms, $3,500; Thomas Dean, $2,000; A. G Marshall, $3,500; E. Shuttleworth $3,500.

Amongst those who have signified their intention of building residences this year at Saskatoon are Hon. A. P. McNab, A. H. Hanson, Magistrate J Jackson, R. H. Timmins, H. H. Elford, J. Priel, H. M. Earle, B. A. Archibald, S. R. Ross, W. Houlding, C. Wentz, A. H. Shannon, J. G. Nicholson and W. Murphy. F. H. Webb and Webster & Noel are talking of putting up apartment blocks while the Union Bank people are figuring on building. Wilson Bros. have added to their premises on First Ave. A frame church will be put up by the German Lutherans while a new land titles office is on the programme.

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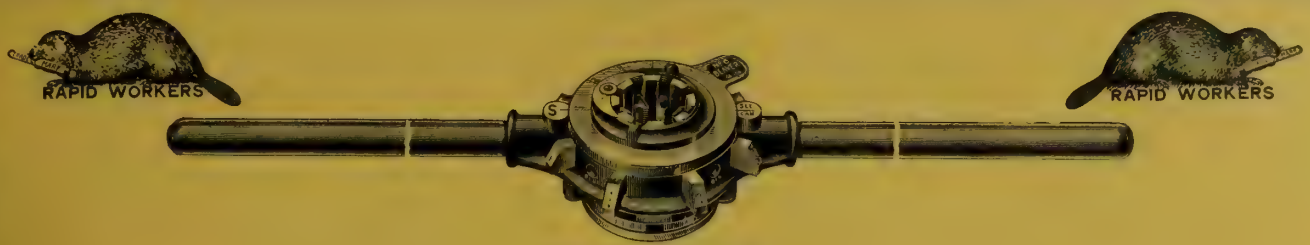

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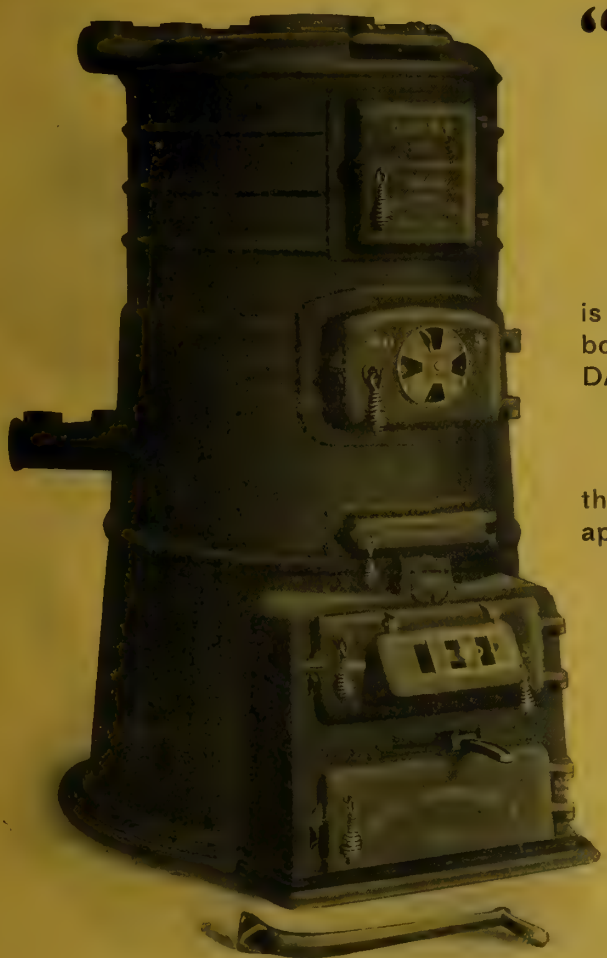

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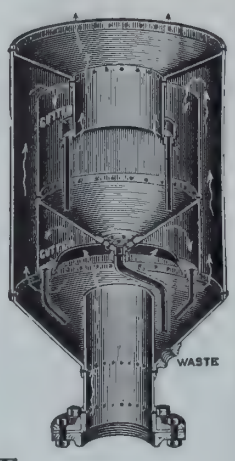

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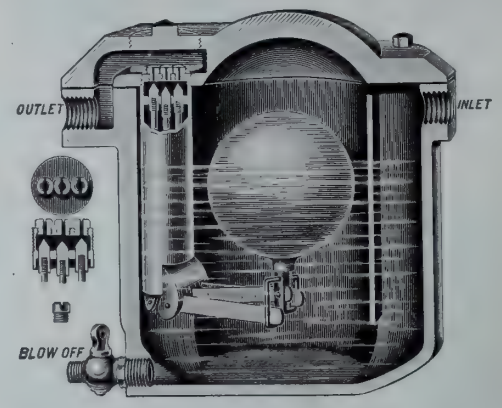

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and Sanitary Engineer of Canada

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TORONTO, MAY 1, 1909

CONCENTRATION HELPS MASTER PLUMBERS.

Several Toronto master plumbers have expressed the view that the elimination of two supply houses from the list in Toronto will work out to the advantage of both master plumbers and supply men.

In the past a new firm would start in business and by paying promptly for goods for a month or so establish a line of credit. Then they would accept work at the prevailing low prices contracting to instal a bath room for $125 or $130, the materials for which would cost them over $100 and the labor over $30. The certain result would be that in three or four months the plumbing firm would run behind, bills at the supply bouse would be unpaid and the firm in order to get goods would pass on their account to another of the numerous supply houses, this process being followed until the gauntlet had been run and the concern would go out of business owing several houses for goods.

Any system which encourages inexperienced or price cutting firms to enter into business, is harmful alike to supply men and master plumbers, and if, by reducing the number of supply houses it has been made harder for disturbing influences to operate, the movers in the recent consolidations in Toronto are to be congratulated.

It might not be a bad idea for the supply houses to take the present opportunity to shorten the terms of credit and get their business closer to the cash system, giving reasonable discounts for prompt payments. The more businesslike the supply houses conduct their trade, the better for the master plumbers, they being in their turn forced to be more careful in their credits.

Adopt modern business methods and let the fit'est survive.

PRICES OF SOIL PIPE

In connection with the low prices of soil pipe prevailing recently and the importations of considerable quantities of soil pipe from the United States, the following from a recent issue of Domestic Engineering is of interest to readers of Plumber and Steamfitter.

Not in twelve years has soil pipe been sold at so low a price as at present. From 2 to 6 inches standard pipe is now selling at one and one-fourth cents a pound at the foundry; 2 to 6 inches extra heavy is now selling at one cent a pound at the foundry; fittings are selling from one and one-fourth to one and five-eighths cents per pound at the foundry. It costs less to make water pipe than it does to make extra heavy soil pipe, but the comparison between the selling price of cast iron pipe and soil pipe will show how soil pipe is being sacrificed. It costs twice as much to make soil pipe fittings as it does to make water pipe fittings and still there is a very large difference in the selling price in favor of water fittings. Prices have gotten so low that with pig iron at $12.50 per ton, it is stated that only plants of the most modern construction and with strong organizations are able to turn out pipe without a loss. This being the case is it not well to warn jobbers and master plumbers to be particularly careful to examine the soil pipe and fittings which they receive, with particular reference to their weight and size? With prices at such a low figure, foundries not able to compete in costs will endeavor to break even by sacrificing quality, and as no jobber or master plumber desires to be imposed upon in this way, a strict examination is necessary. In a recent inspection in Chicago some pipe was found which was marked "Extra Heavy, Tested" but did not bear the name of the maker. Why? The answer could be secured by putting a few lengths on the scales. Soil pipe has recently been found measuring 3¾ inches inside diameter. All of these miserable impositions should be carefully watched for and prevented if possible."

PLUMBERS SHOULD KNOW THE LAW.

There are so many ways in which a plumber can be, and is, defrauded of his just dues that it is a wise move for every man to make himself fully acquainted with the laws of the land. Despite the fact that a plumber is supposed to be a man who is always on the lookout to "do" the person who has employed him, there is no man more often "done" by the people he has worked for than the plumber. Apart from his lack of system, which makes him unbusinesslike in the collection of his accounts, and his general proneness to trust a man who promises to settle shortly, the plumber in accepting sub-contracts puts himself at the mercy of the contractor with most simple belief in the latter's integrity.

How often are there cases where a small plumber has put in weeks of work and material on a job only to find suddenly that the contractor has failed, and that the landlord "knows nothing about the sub-contract and the work put in." Many contractors take on a big contract when they know that there is little chance of their

pulling through, and yet they have no hesitation in letting in an unfortunate sub-contractor. But there is, we understand, a way in which the sub-contractor can make himself secure, and yet very few plumbers seem to know of it, or if they do, seldom employ the precaution. If a sub-contractor, before the starting of the work, notifies the landlord by letter that he has the sub-contract, and that he will hold the latter responsible for the work, then the plumber is safe, providing the landlord does not in the meantime repudiate the liability. Then when the contractor draws his money he must either show receipts for the sub-contract, or else the landlord pays the sub-contractor himself. While if the contractor fails before the completion of the job, there is no chance of the landlord saying that he knows nothing about the sub-contractor. There was a case in Montreal recently where a plumber would have lost many hundreds of dollars but for the precaution of notifying the landlord that he had undertaken the contract, and would hold him responsible. It is cases like this that warn plumbers that they should make themselves fully conversant with the law, and with all the safeguards that exist to protect the workman. There is little morality in business, and a plumber must keep his eyes open or he will get victimised all the time. Study the laws, and take every precaution, even if in doing the latter there may be a likelihood of losing the contract. If a man takes umbrage at another man making his money safe, then it is doubtful whether the one ever intended to act squarely to the other. Better lose a job than be deprived of the money that would be due for the execution of it.

GIVE TRAVELERS A HEARING.

"My desk is right here in a big open office," said a leading radiator manufacturer of Toronto to a representative of Plumber and Steamfitter the other day.

"You may wonder at this, but it has many advantages. I can easily see every one coming into this establishment, and am, therefore, in a position to know if they are getting prompt, polite and proper attention. Every move in the place is under my scrutiny, and the only inconvenience is that there is considerable noise at times owing to so many clerks and typewriters in the office, but one gets used to the buzz. We have only two private or walled-in offices in the whole factory. One is for the auditor and there is another for any one who desires to discuss some private matter. Heads of departments complain at times that they are placed in too open and exposed a position. Now I tell them it is their duty to meet all people who wish to see them and treat them courteously. I do not believe in dodging anybody and resorting to all kinds of subterfuges to get rid of undesirable callers. All traveling representatives and others are accorded a friendly welcome and one remarked to me a few days ago: 'Well, I always like to come and see you. I get a kind greeting even if you do not give me an order. I wish that I could say the same of everybody on whom I call.'"

When one of the heads of this firm expressed a desire for a more private office the other day I promptly told him it was his duty to meet everyone who had any business to transact with him. I brought the lesson home by remarking that we ourselves had twelve or fifteen travelers on the road and he should treat others in the same way as we like to have our own representatives treated. This made the point, and the application of my remarks clear, and he added: "I see things differently now. I certainly would not like to have our own men accorded a gruff, indifferent reception or to be kept waiting an unnecessary length of time on some flimsy excuse."

"I want to tell you," continued the speaker, "that I spent several years on the road and I have at times gone many miles to call on a hardwareman, and then, perhaps, he would not see me or else would give me a churlish reply, intimating by act, if not by word, that my call was not welcomed and the sooner that I took my departure the better pleased he would be. Now, here is a point which I wish Plumber and Steamfitter would impress upon its subscribers, and it is this, the man who refrains from or neglects seeing a traveler, probably thinking he is saving time, that he has stock enough already or business is too slow to place further orders, is making a grave mistake. The traveler is his best friend, whether he is a customer of the firm or not, and can often give him pointers which are valuable and timely on the way the market on certain classes of goods is shaping, whether there is going to be an advance in price, whether anything new is coming out, and how the future appears generally. The traveler is the best barometer of business and probable change in prices, and unless the merchant places himself in the closest contact with all avenues of information in his particular line, he is bound to lose money and some other man in the trade not so short-sighted will reap the benefit. It is a narrow, selfish policy for any up-to-date business man to refuse to see a traveler even if he does not require anything. He can often pick up valuable information and trade pointers which will repay him many times over for the few minutes taken up in conversation or in looking over samples, and inquiring prices."

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Keep moving. Things move so fast these days that people who say, "It can't be done" are interrupted by the people who "do it."

Nearly every time a man is swindled in a bargain it's because he thought he was smart enough to swindle the other fellow.

Optimism is the first born of hope, the mother of confidence, the executioner of adversity and the undertaker of pessimism.

Lots of people must think that opportunity packs a gun, the way they dodge.

One way to have a lot of friends is to forget a lot that you know about them.

Faith that can move mountains can't always get away with a bluff.

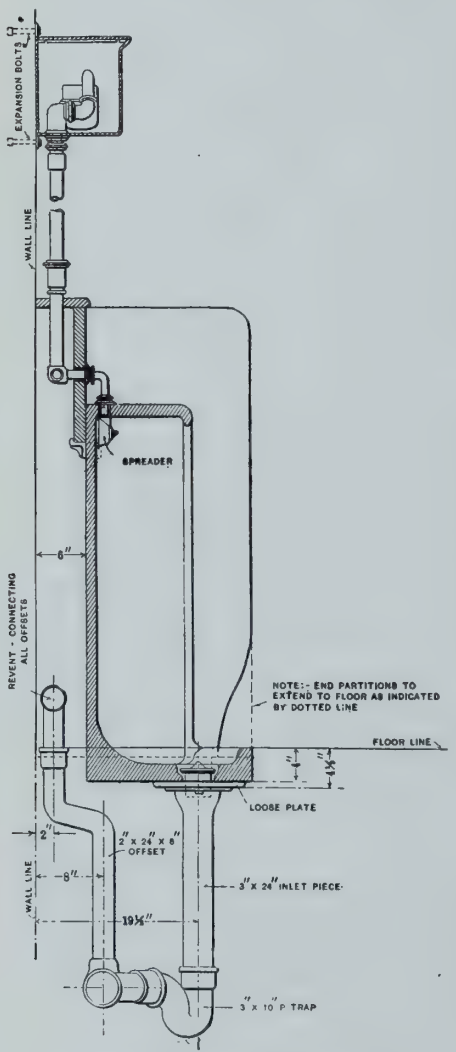
Hard luck runs away from the man who looks it square in the eye.

It's a good thing that some people are self-satisfied, for they never could satisfy any one else.

Plumbing in Schools, Hospitals, Prisons

Address by Thos, J. Claffy, Assistant Chief Sanitary Inspector, Chicago, Before the Recent Convention of Plumbing Inspectors at Omaha.

The system of plumbing which for the past few years has been installed in the public schools of Chicago, is the best that could be designed under the circumstances. The tendency is for improvement at all times. The very efficient engineering force of the board of education keeps well abreast of the times and is ever ready to adopt any



Section Through Urinal.

and every improvement of design or fixture.

There is a custom quite prevalent among architects, of so designing school buildings that the toilet rooms for pupils are in the basement, or in a separate one-story wing on the ground floor.

There are some objections to this plan and one of the main objections, aside from that of morals—which need not enter here—is, that some of the fixtures must necessarily be arranged along an outside wall. By referring to the plan No. 1, which shows vent fittings for urinal wastes, we find an offset vent fitting which is used where a battery of urinals are set against an outside wall. And the vent and waste lines not being over each other on account of the projection of the foundation wall, an offset is necessary.

There is in such a case a possibility of frost obstructing the vent and rendering it useless, also of the traps freezing. If water closets or other fixtures are placed in such a position the same objection would arise; for the waste or soil pipes being necessarily beneath the floor—and as is the custom in Chicago, imbedded in concrete—are exposed to the action of frost.

Toilet Rooms on Each Floor.

There is no valid reason why the toilet rooms for schools should not be placed on each floor on which school rooms are located and the number of fixtures apportioned as they are now. Ease of access, sanitation and morality are all enhanced thereby and the action of frost very much lessened.

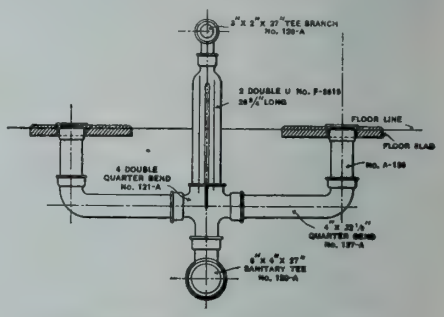
The use of seat-acting tank supply closets, and lipped porcelain urinal stalls with tank flush, the details of which are shown in plan Nos. 5, 6 and 7, is common in Chicago public schools. Such fixtures installed in a toilet room having a hard tile or concrete floor with walls of glazed brick or tile and abundance of daylight and ventilation, approach the ideal in school toilet facilities. The details of installation and venting are shown in the plans Nos. 1, 2 and 3.

A double row of closets set as shown, with flushing tanks concealed in the pipe corridor and vent and soil lines as shown in No. 2, may be taken as typical of all present-day school work, except that a vent fitting is now being used (here show the plan No. 4) which eliminates the horizontal connection and makes a much better and safer revent system for the closet traps.

The urinal vent and waste lines as shown in No. 1 are typical of present-day urinal installation in schools, except that efforts are being made to bring the trap closer to the waste outlet of the urinal and avoid the offset vent which is shown at the wall line.

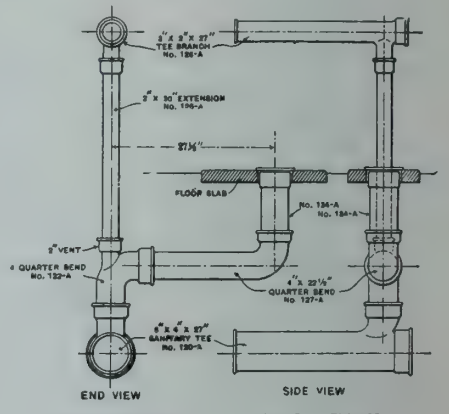
Construction of Urinals.

Right here permit me to say that our best efforts should be directed to having



Arrangement for Double Stalls.

all earthenware urinals cast or molded with the trap in the fixture and the water line well up in the bowl or stall, so that there shall be no part of the urinal or waste outlet above the water seal which cannot be readily scoured and cleaned. We all know how foul smelling is the average urinal with its strainer and waste outlet above the water seal, polluting the air with its noisome odors. Earthenware urinal stalls, if provided with a proper flush and set-up, as is the custom in Chicago with the sides cut back as shown in the plan, give very good satisfaction and have proved to be the best type for all-round use in schools.



Arrangement for Single Stalls.

There is another type of urinal, however, which has given very good satisfaction, the type used largely in eastern cities. This type of urinal, if properly installed with vent flues and water

flush, will prove very satisfactory, provided non-absorbent materials are used, and set up where vibration or settlement will not damage its joints.

The flushing of water closets and urinals in schools is a question worth some study. Children cannot be depended upon to flush a fixture after using it, so that designers of such plumbing usually provide for automatic flushing systems.

The seat operating closet has given very good satisfaction when equipped with good valves, tank and seat. The open tank is better under all conditions than the pressure tank, inasmuch as its action is independent of the city water pressure.

The earthenware urinal stalls so generally used are equipped with automatic flushing tanks set to flush at frequent intervals, so as to insure cleanliness at periods of maximum use.

Plumbing System for Hospitals.

The plumbing system for hospitals is really in a class by itself. It is needless to say that the best is none too good for hospital use. And architects and sanitary engineers endeavor to keep abreast of the times so as to insure the installation of that which is best on hygienic lines.

The location of toilet rooms is necessarily governed by the plan of the building and scope of its operations. Ventilation is governed by the same rule which applies to wards, etc. The scheme of ventilating pipe lines and of reventing traps should be similar to that which is applied in school work, viz., continuous waste and vents. One thing alone is necessary to keep in mind in planning all such work, and that is simplicity. This can be attained only by planning well and working out the details before any of the construction work is started.

It is well in all hospital work to plan for impervious walls, ceilings and floors, and to avoid all sharp corners. The installation of pedestal earthenware closets with rim seats will appeal to anyone who recognizes the needs in contagious disease rooms or wards.

There is also on the market another very good type of closet for the same purpose, viz., a closet having a wood seat so divided and hinged that each side of the seat acts independently of the other, and the projecting rim in front being at all times uncovered is easily cleaned and disinfected.

Briefly, it is well to avoid the use of putty, which sometimes, like charity, covers many faults, also rubber or leather gaskets and any substance or material which yields easily to disintegration under the action of acids or gases.

Prisons and Asylums.

In the report of the Health Department of Chicago for 1906 may be found a contrast of the ancient and modern in prison plumbing work.

The illustrations and ground plan shown tell us more in a glance than several pages of composition would on the same subject. The "best is the cheapest" here as well as in hospital work, and while the first cost of vitreous china water closets for prison work may seem excessive, yet their durability and hygienic qualities under all circumstances and severe usage amply justify the cost.

The system of venting and reventing is similar to that used in school work. We have seen several types of closets used in prison work, among them being the short hopper and trap, set under a steel seat. The result was incrustations on the closet bowl, and the consequent nuisance.

we most heartily indorse iron drainage. And further, we believe that such drains for all work above the basement floor should be exposed.

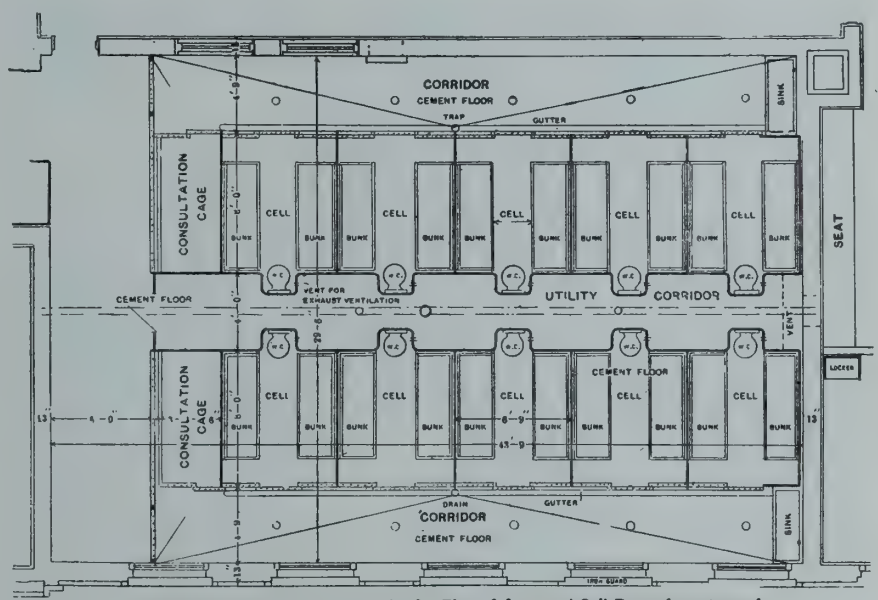
It is, in nearly all cases, most undesirable to place plumbing fixtures in a basement. The reasons are obvious, and especially so to anyone who has had any plumbing experience in cities built on a flat plain.

The best types of plumbing fixtures, with plenty of free air and sunshine properly provided for, and competent mechanics, insure for us ideal plumbing systems in schools and public institutions.

INTERMITTENT SIPHON.

In the intermittent siphon the flow is not continuous.

It is arranged in a vessel, so that the shorter leg is near the bottom of the vessel, while the longer leg passes through it.



Water Closets in Prisons, etc. Fig. 6.—Plan of Approved Cell Room Arrangement

If the closets had been set in the open, so as to be exposed to view from the guards' corridor, the carelessness of inmates or janitors would soon be in evidence.

It is well to let the daylight shine on all things, even in the prison cell, for it insures death to germs and the spirit of uncleanliness.

The installation of urinals being a minor part of prison or asylum work, we may pass it over.

The ventilation of prison or asylum toilet rooms or cells is usually by mechanical means. This is best accomplished under a plenum and vacuum system, with a capacity of at least ten complete changes of air every hour under a maximum working pressure.

In all institutional plumbing systems

Being fed by a constant supply of water, the level gradually rises both in the vessel and in the tube to the top of the siphon, which it fills, and water begins to flow out.

But the apparatus is arranged so that the flow of the siphon is more rapid than that of the tube which supplies the vessel, and consequently the level sinks in the vessel until the shorter branch no longer dips in the liquid; the siphon is then empty, and the flow ceases.

But as the vessel is continually fed from the same source, the level again rises, and the same series of phenomena is reproduced.

The theory of the intermittent siphon explains the natural intermittent springs.

Why Bubble Fountains Should be Used in Schools

A. R. McGonegal, in Domestic Engineering, Advances Strong Arguments Against the Common Drinking Cup and in Favor of Bubble Fountains.

Has the time come for the sanitarians to turn from our old friend the chained dipper and its polite successor, the glass tumbler, as a medium for the slaking of thirst in schools, parks, and public buildings generally? Has the time arrived when we may accept the "bubble fountain" as a practical, everyday fixture, tending to cleanliness and sanitation and not as a fad? I think it has.

The fixture was introduced in Washington five years ago, as more or less of a novelty, and while it was immediately adopted by one branch of the District Government, and I have been its passive friend, I have only recently become its champion.

How the Children use the Bubble Fountains.

Old Style Fountains Wasteful.

My first acquaintance with it was in the Prescott School in Syracuse, N.Y., twenty odd years ago, where I saw it in the form of an unlovely cast iron, water wasting four-spouted thing, set in the centre of the boys' play-room. After a lapse of over fifteen years I saw it again in the form of a snow white porcelain fixture, and a model of cleanliness in a Washington school. Five years ago it was manufactured by only three firms; two years ago by six firms, and to-day by at least twelve firms, that I know of, and perhaps many more.

With many others I believe that the step from the "chained dipper" to the bubble fountain in parks and public buildings where the water flows continuously into a pool in which the dipper rests, is not a necessity, but I do believe that the unwashed and dirt catching tumbler must go.

"Bubble fountains" may be divided roughly into two classes; those in which there is a valve by which the drinkers cause the stream to flow, and the type commonly called continuous flow. These two classes may each be divided into two types; in one of which the water spouts directly upward from a nozzle, and in the other the stream from the spout is retarded by a small mass of water to give ease to the act of drinking.

Continuous Flow Type Best.

To get full value from the change, it would seem that we ought to adopt the continuous flow type. In this connection I give a transcript of the various requirements of a sanitary fountain according to one of our authorities who believes in this type, with the "water mound" instead of the "thin stream" style of drinking:

"The necessary attributes of a bubble fountain, in order to bring theory and practical construction and use as close together as possible, are:

"1. A cup holding a small mass of water above the jet nozzle in such manner that the stream from the main jet is so retarded as to take the appearance of a mound of water rather than a thin stream. Preferably 1 to 1¼ in. high and ¾-in. across at base. This being easier to drink from than a stream.

"2. A cup holding no more water than is absolutely necessary for the above requirements.

"3. A cup, so arranged by means of the curvature of the inner wetted surfaces, as to make its easy washing by several side jets (not less than six), as perfect an agitation of its contained water as possible, and the renewal of the whole body of water contained at any one time as quickly as possible. It should not be possible for one person to drink and straighten up, and another person to bend over in time to have their lips touch any water that has touched the lips of the previous drinker or to touch any surface of the fount itself that has not been cleansed and washed constantly.

"4. A cup so arranged together with the various jets from the top and side of the nozzle that it will be practically impossible to spit, either intentionally or not, or to allow the drippings from the nose, or dirt or perspiration from the face to fall into the cup and not be immediately ejected therefrom.

"5. A cup with a perforation in its lowest level to drain the cup in a reasonably quick manner after the water is shut off, so that the cup will not hold water in a stagnant condition to become offensive or foul the surfaces of the cup. This perforation to be large enough to keep from draining on account of capillary attraction and not so large as to seriously interfere with the currents of water from the jets circulating in the cup and wasting over the edge. (⅛-in. has been found O.K.)

"6. A cup with more or less blunt surfaces exposed toward the face of the intending drinker so as not to cut in case the drinker slips or is accidentally pushed or crowded.

"7. A nozzle so arranged as to make it impossible for a person to use his hands or fingers in such manner as to spray or squirt the water on surrounding walls or surfaces, either accidentally or with malicious intent. The side jets care for this requirement as well as for their original purpose of properly washing the cup and circulating the water therein."

Objections Considered.

Many reasons both against and for have been given, those against being only two (with variations), i.e., posture of drinkers, and waste of water. The first may seem nonsensical to some read-

ers but I have known many to advance it; indeed, a prominent educator stated to me, that she "had spent all her life teaching her boys to be upright, and now they had to bend over and drink like a dog." I do not think such a criticism needs any argument. As to waste of water; does it waste water? If the stream from the nozzle is maintained at an economical height (1 in. to 1¼ in.), how much is the flow from a fountain in a school day of, say, seven hours? Take an ordinary 8 or 10-room school building in a small city with two fountains and test it with a meter. You'll be surprised at the small amount for each of the 350 or 400 pupils in the building. Test a pair of sinks with ⅝-in. cocks, and see if there isn't just about as much water that has been standing in the pipes. wasted before the pupil drinks. I know of at least one place where the waste was to the credit of the other side. Test the amount of water used at a single horse-trough, running 24 hours a day, 365 days per year. Why should we who provide these drinking places for our brutes hesitate to waste (?) water on our boys and girls. Are they not entitled to every improvement, every little artifice that shall tend in any way toward healthy, vigorous manhood and womanhood? How many continuous flow drinking fountains running 35 hours a week could be maintained on the same amount of water used by one of the ornamental fountains in our parks running 168 hours a week? If it is a waste, is it not the very best place to start wasting water?

The argument has been advanced that drops of perspiration, dirt, etc., are liable to fall from the face of the drinker into the fount. Would it not be so were the drinker using a glass? It would be immediately ejected from the fountain; but not from the glass.

Costs Less to Maintain.

The reasons for its use can also be divided into two classes: practical and therapeutic. It costs no more to install than the spigot type; there are no glasses to break and require replacing; there are no self-closing cocks to get out of order; there is no stagnant water standing in the pipes. The water flows in a practically continuous stream from the reservoirs and is cool enough to drink on the warmest days without any necessity for the use of ice. The fixture being without unwashed metal parts, there is little chance for corrosion and unsightly discloring of the plating, and it is therefore cleanly looking at all times, and the sparkle of the running water is inviting.

A fixture conforming with the "requirements" above quoted could not transmit any of the various germ diseases, to say nothing of disease of the mouth, throat and lungs, the transmission of which is possible, to say the least, with the glass tumbler or dipper.

The fixture in its best form consists in a nozzle with a main perforation in its top and several smaller perforations around its sides. This nozzle is set in a cup of either metal or earthenware in such manner that the cup when full contains water to a sufficient depth to cover the nozzle with about ½-in. of water. The cup generally is not over 3-in. in diameter and about 1¼ in. deep, and partakes of a parabolic shape. The main stream from the nozzle, being retarded by the depth of water, takes on the shape of a mound of water an inch or so in height and the waste of the fixture is over the edge of the cup thus leaving no part of the immediate drinking portions of the fixture without a continuous wash. The cup is so set in a porcelain slab that the intending drinker cannot drink from the edges of the cup but must drink directly from the top of the stream, without the lips coming in contact with any part of the fixture. The side jets in the nozzle force their streams out against the curved inner surfaces of the cup in such manner that the water within the cup is thoroughly agitated at all times and being constantly expelled over the cup's edge.

It should be borne in mind when installing these fixtures that a sand screen or similar device on the supply pipe is necessary. It is also good practice to add a water pressure regulator and, if desirable, a filter.

Cool Water Always Available.

A very good but somewhat expensive adjunct is in use in one of the northern cities, consisting of a quadruple run of small pipes up and down a well two or three hundred feet deep, driven solely for the purpose of cooling the water, and which it seems to do in an excellent manner.

I find that the tendency is for school authorities generally to either accept or dismiss the idea of the "bubble fountain" without serious consideration; like or dislike of the fixture being conceived on its first acquaintance, and without investigation of the various arguments pro and con.

I do not know but it has been thus always in the matter of innovations, but I trust that the day will come when the clean little fixture will be accepted for its true worth and it will have its place in the halls and playrooms of our schools and in our parks and public buildings throughout our land.

PLUMBING IN CITY SCHOOLS.

Chief Inspector of Plumbing Henry B. Davis of the District of Columbia, has made a report on his inspection of school plumbing in the cities of Omaha, Chicago, Pittsburgh and Cleveland. The important points in plumbing construction brought out by Mr. Davis in his report can well be considered in the future construction of school buildings in Canadian cities. In part the report reads as follows:

"In comparing the plumbing I saw in Omaha and Chicago, and including Pittsburgh and Cleveland, the fixtures used in the schools of this city are far in advance. Other cities are experimenting with different types of fixtures which I discarded some years back, and I am written to constantly for a description of our school fixtures and they are being used in a number of cities.

Drinking Fountains.

"I believe the policy of providing drinking fountains on each floor and in the basement for boys and girls is better than to provide them only in the basement, as in the schools I visited, or not to provide them at all, as will be seen from the following relating to school plumbing at Oak Park, Ill. The continuous flowing bubble fountain for drinking used here is far ahead of the intermittent flowing drinking fountain or the one with a cup. Other cities seem to be experimenting with the last named type, while we experimented with them and discarded them for the continuous flowing fountain some time ago. Ice water being supplied to drinking fountains is an innovation and is possible in new buildings.

"I submit some other features of plumbing and construction gained by my visit which may be of use and could be considered in our new buildings.

Tile or Asphalt Floors.

"The use of tile or asphalt floors for toilet rooms and asphalt floors for halls and basement floors instead of concrete is also to be commended, first, because asphalt is less noisy and easy to the feet; second, because it is not necessary to cut into squares and have grooves filled with dirt and filth, and it is not so liable to crack like concrete and cement or powder; third, it is waterproof and offers less opportunity for using poor material and workmanship than cement work and is more satisfactory in every way. The asphalt stair tread for stairs is superior to the slate or iron treads used here on stairs, as they are less noisy and do not wear away like slate and are less slippery.

"Much more attention is given to floors and wall surfaces in other cities to make them impervious than has in the past been given in our schools except in a few cases, unglazed hexagon

tile and asphalt being used on the floors, vitrified brick and marble wainscot, with smooth finish plastered walls and ceilings painted with enamel paint.

"The only suggestion I can offer which would improve the condition would be to form a cove in asphalt at the junction of the floor and wainscot, to get rid of the joint of wainscot at the floor line which harbors dirt and is almost impossible to keep clean. Vitrified brown brick wainscot 6 ft. high in corridors and stair halls in place of plaster or wood is a distinct advance in construction.

Novel Feature in Ventilation.

"A feature in ventilation noticed at the new Tilton School, Chicago, is the making of the cloakroom a part of the classroom, it being 3 ft. deep and provided with three upward sliding doors, which do not come closer to the floor than 1 ft. The vent register for classrooms is located in the cloakroom in a flue, and all the vitiated and heated air is drawn out of the classroom under the doors of the cloakroom. This heated air assists in drying wraps and removing odors from clothing of the children, but it necessarily causes the dust and germs and vitiated air in the schoolroom to pass by and settle on the children's clothing before being drawn out of the room, and, while it has some good features, it seems to me a questionable practice and may interfere with the proper ventilation of the classroom."

HOW TO FIGURE NET PROFIT.

By H. R. Wellington.

In every business a certain class of expense accounts must be kept, although the titles and arrangement may be particular to the class of business carried on. For instance, in a certain business where advertising is a special feature, it is desirable to open a separate expense account for advertising; then again, cartage or freight may be unusually heavy items and it is necessary to know the total amount expended yearly for each item. These expense accounts may be grouped under comprehensive headings, such as "Heat," "Power," "Water," "Light," etc., but the information gained by separate accounts for each heavy expense item more than compensates for the extra work involved in opening a few new accounts. A plan adopted by a number of large concerns who desire to have detailed information in regard to expenses, is to have representative accounts in the ledger and a special itemized expense book with twenty, or even thirty columns for classification, which book is written up each month from the book of original entry, thus giving the total expenses for each minute division monthly.

Expense of a Retail Store.

At the end of a certain period we find the total of the various expense accounts, after making allowances for (1) insurance prepaid, (2) stationery and sundry expense supplies on hand, (3) rent and taxes due, etc., to be as follows: Light $50, power $15, water $10, heat $60, rent $500, taxes $30, postage $25, stationery $30, salaries $3,000, express and freight $75, delivery $40, 'phone $20, wrapping supplies $30. These items may be classified as follows:

Heat, power, water, light	$ 135
Rent and taxes	530
Postage and stationery	55
Salaries	3,000
Carriage and delivery	115
Store expense	50
Total expenses	$3,885

The sales for the same period amounted to $40,800, the purchases of new goods $30,000. The stock on hand at the commencement (taken at cost) amounted to $7,000 and the stock on hand at the close, taken on the same basis, amounted to $6,500. The trading account therefore shows as follows:

Trading Account.

Dr.	
Stock on hand	$ 7,000
Purchases	30,000
Gross profit	9,500
	$46,500
Cr.	
Sales	40,000
Stock on hand (at finish)	6,500
	$46,500

The partners' share in the profits is simply a matter of arrangement between the partners themselves, but for the sake of illustration we will suppose that $8,000 has been invested in the business, and that each partner gets a salary of $1,000 a year. It has also been decided to charge against the profits interest at the rate of 6 per cent. on the capital invested. Our trading and profit and loss accounts would then appear as follows:

Dr.	
Total expenses	$3,885
Net profit	*5,615
	$9,500
Cr.	
Gross profit	*$9,500
Dr.	
Partner salary	$1,000
Partner salary	$1,000
Interest, $8,000 @ 6 per cent.	480
Balance credit profit and loss	*3,135
	$5,615
Cr.	
Net profit	*5,615

Morrison Bros., Display Room at Lindsay, Ont.

LARGE PLUMBING DISPLAY ROOM.

Morrison Bros., Lindsay, Ont., whose display room is shown in the accompanying engraving, are an enterprising firm who are developing a good trade in both plumbing and heating. Considerable of this development is ascribed to their modern display, customers being able to see the goods and select what they want without trouble. With a good display, too, it is possible to use salesmanship methods and induce customers to purchase high class rather than cheap goods.

All the Galt plumbers are exceptionally busy installing the plumbing arrangements in new houses. It will be the best building year in the history of Galt.

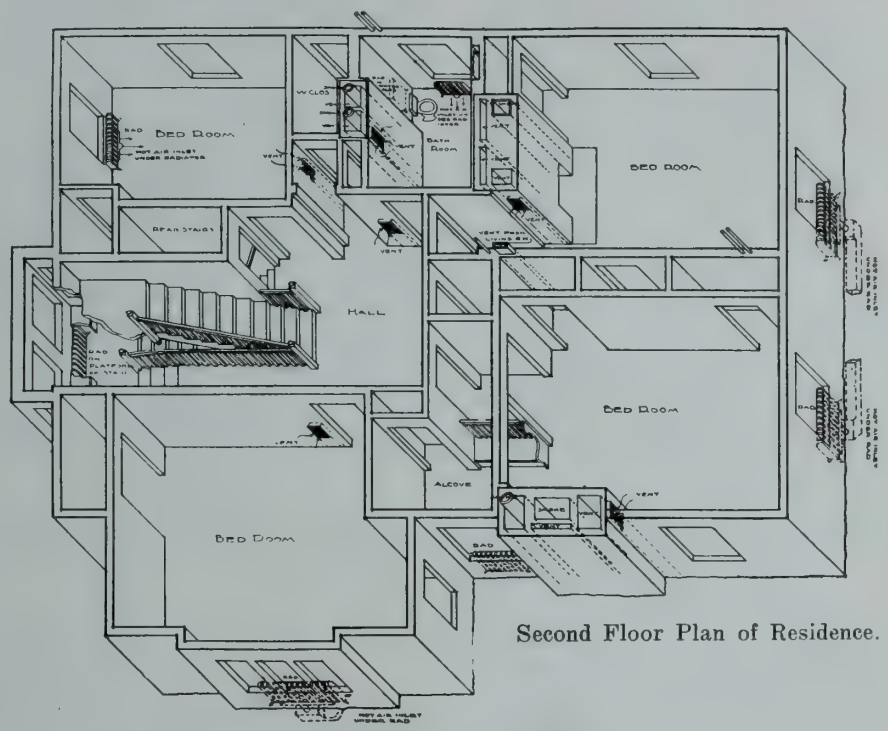
Heating System in Country Residence

Direct and Indirect Hot Water Heating, Ventilating and Humidifying System in a Residence Constructed a Year Ago and Operated Successfully During the Recent Winter.

Given an owner who has well defined ideas of the kind of heating and ventilation required in his home and an engineer competent to fulfill those requirements, the result is very likely to be a highly modern and efficient plant. Such a result has been achieved in the three-storey and basement residence of Charles Cluthe, sr., on Ridgewood Ave., Glen Ridge, N.J. The house is a new one and has been occupied but one winter. The operation of the system during that period, however, has been carefully observed and has not only met the expectations of the designer, but has shown a surprising economy in the consumption of fuel. Although the winter was a comparatively mild one in that section, the coal consumption totaled less than ten and a half tons up to April 1.

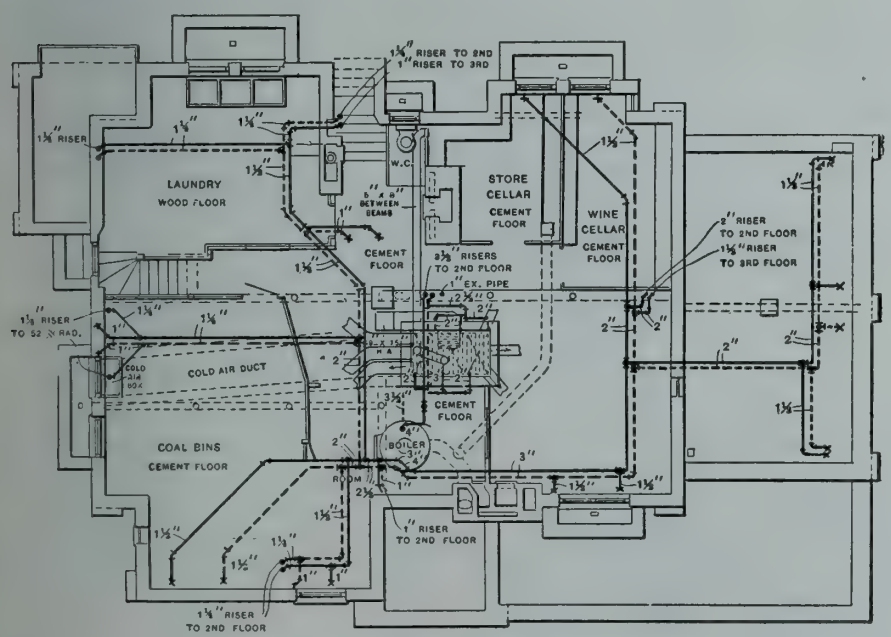
The arrangement consists of a combination of two heating systems, direct hot water and indirect hot water. It is a two-pipe gravity system operated by a Bernhard boiler having a rated capacity of 2,475 sq. ft.

The warm air supply is provided by a heating chamber located in the centre of the basement in which heating stacks are located. Ducts lead from this chamber to various points in the basement where they connect with risers leading to the rooms to be ventilated.



Second Floor Plan of Residence.

A 4-in. supply pipe leaves the heater, and at the point shown on the drawing the pipe is reduced to 3½ in., and is carried up and run between the first floor beams to the rising point shown on the basement plan. The riser runs to the second floor, where it is connected to a tee, 3½ in. x 1 in. x 3½ in. the in. outlet looking upward from the remaining 3½ in. outlet. The piping is run 3½ in. back to the cellar, where the necessary connections are made for the supply to the separate six stacks in the heating chamber. The supply to each stack is run from a 3½ in. headed main of 2 in. pipe direct to stack openings.



Cellar Plan showing Supply and Return Piping.

From the 1 in. outlet above described, a 1 in. pipe is run between floor beams on the second floor and up in partition to the third floor, where it is connected to a 42-gal. expansion tank. At this point there is a 1 in. stop cock which, in the operation of the system, is opened one-quarter inch to release the air from the heating stacks. The expansion pipe connected to the bottom of the tank is 1 in. It is brought into the cellar and connected separately to the bottom of the heater. The overflow pipe from top of tank is 1½ in. and is carried through the roof and provided with a 1½ in. return bend on top of same.

The central heating stack chamber is built of 8 in. brick and is large enough to accommodate 600 sq. ft. of indirect radiation, arranged in six separate stacks of sanitary school pin indirect radiators made by the American Radiator Co. The lower tier of stacks are so set as to permit of 6 in. space be-

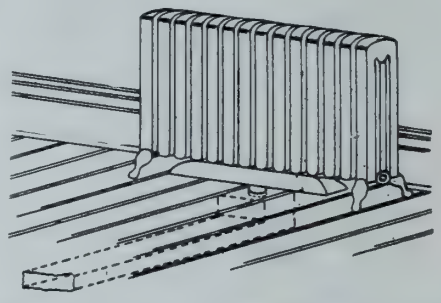
tween them. The chamber has a galvanized iron door for access to the stacks. It is made in two sheets, with a 2 in. space between, packed with mineral wool. In order to give an equal distribution of air through the stacks, three galvanized iron louvres are provided, lapping each other and extending the full width of the stack. They have rounded edges, as shown in the sectional view of the heating chamber.

Fresh air is brought in through a cellar window of an area of 600 sq. in., and carried through an underground cold air chamber of brick. The opening is provided with a pivoted swinging damper arranged to be locked at any angle. There is provision for recirculating the air in the house by closing the damper entirely and opening a register in the first floor hall, 14 in. x 16 in. Provision is also made for the placing of an 18 in. fan to be used in connection with the gravity system.

The total amount of direct and indirect radiation distributed throughout the house is 1,381 sq. ft., of which 600 sq. ft., as stated, is indirect surface in the heating chamber. The supplementary supply of hot air is furnished to the main hall, living room, dining-room and reception room on the first floor, and to four bedrooms and bathroom on the second floor. The outlets supplying air to the different rooms are brought through the floors directly under the radiators, coming through patented registers, which are of unusual construction.

These registers are shaped like a trough with a plate covering containing holes of varying sizes. (Through an inadvertence, these registers are drawn upside down in the plans). The holes nearest the centre are small and grow larger toward the outer edges. In operation the registers accomplish their purpose of diffusing and lowering the velocity of the incoming warm air in an admirable manner.

In addition to the other features of the system one of the most interesting is the provision for filtering the air and imparting to it some, though perhaps not a great deal of humidity. This provision is shown on the sectional view of the heating chamber, where a ¾-in. perforated brass pipe is connected to the water supply, the perforations, pin holes of the smallest size, being drilled and spaced ½-in. apart and extending the full width of the heating chamber in a straight line. From this pipe a constant stream of water trickles, forming a partial sheet through which the incoming cold air is forced to pass. That it accomplishes its purpose is seen by the fact that the amount of dust in the house is unusually small, while the danger of dampness is not apparent.



Detail of Hot Air Supply under Radiator, Trough, Shaped, Register being Shown Upside Down.

The disposition of the vent ducts is another unique feature. The spaces between the floor beams and the studs are utilized for this purpose. These vent ducts are carried to a vent flue in one of the chimneys, where the warm gases of the chimney effectually prevent any back draughts that might be caused by the wind.

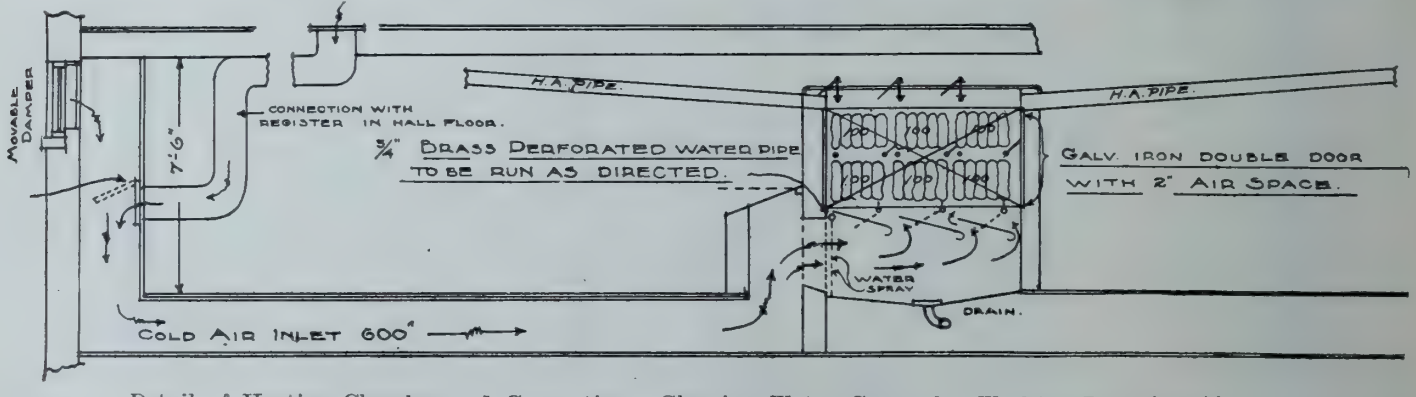
As a further protection against the admission of dust into the house the owner has adopted the expedient of isolating the boiler room by means of asbestos partitions fitted with transoms. At times when the grate is shaken or ashes removed, the boiler room may be made tight by lowering the transoms, while a small vent flue in one corner of the boiler room effectually carries off the dust.

As regards the cost of the plant, it was in the neighborhood of $1 814 or about twice the cost of an ordinary direct hot water heating system. As operated, however, its consumption of ten and a half tons of coal for the heating season is a remarkable showing, while the added comfort obtained through its ventilating features counts for much, as is enthusiastically attested by the owner. In short, the system represents a degree of refinement in residence instalations that is not often seen and that was brought about in this case only by preconceived notions along the right lines which were held by the owner, and therefore giving the necessary latitude to the engineer.

This system works entirely automatically by the outside changes of the weather. Mr. Cluthe is the inventor and designer of it, the details being worked out by George F. Clark, heating and ventilating engineer, Newark, N.J.—Heating and ventilating Magazine.

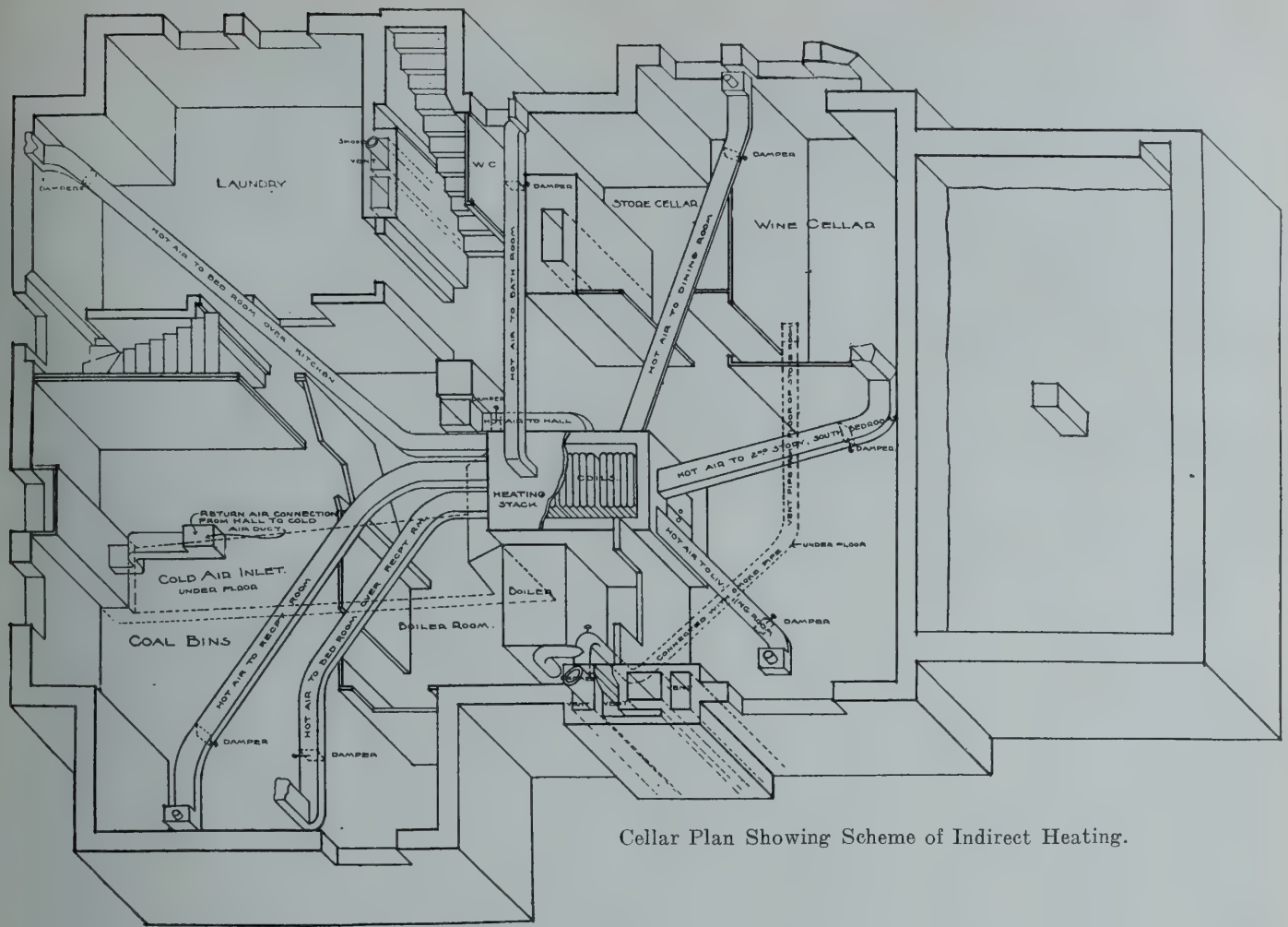
PLUMBER CAUSED FALSE ALARM.

That the thermostat is a faithful article is proved by a recent experience in Haverhill, Mass. It seems that shortly after the employees arrived at a factory one morning it was discovered that several pipes were frozen and a plumber was summoned. He allowed the flame of his torch to rest beneath the pipe and a thermostat provided in the fire alarm system came in contact with the blaze. The device answered the quick rise in temperature and the proper bells started ringing and the apparatus from the central fire station took its long run to the factory, where the plumber and his interested onlookers were mildly surprised. An investigation soon showed the cause of the alarm.

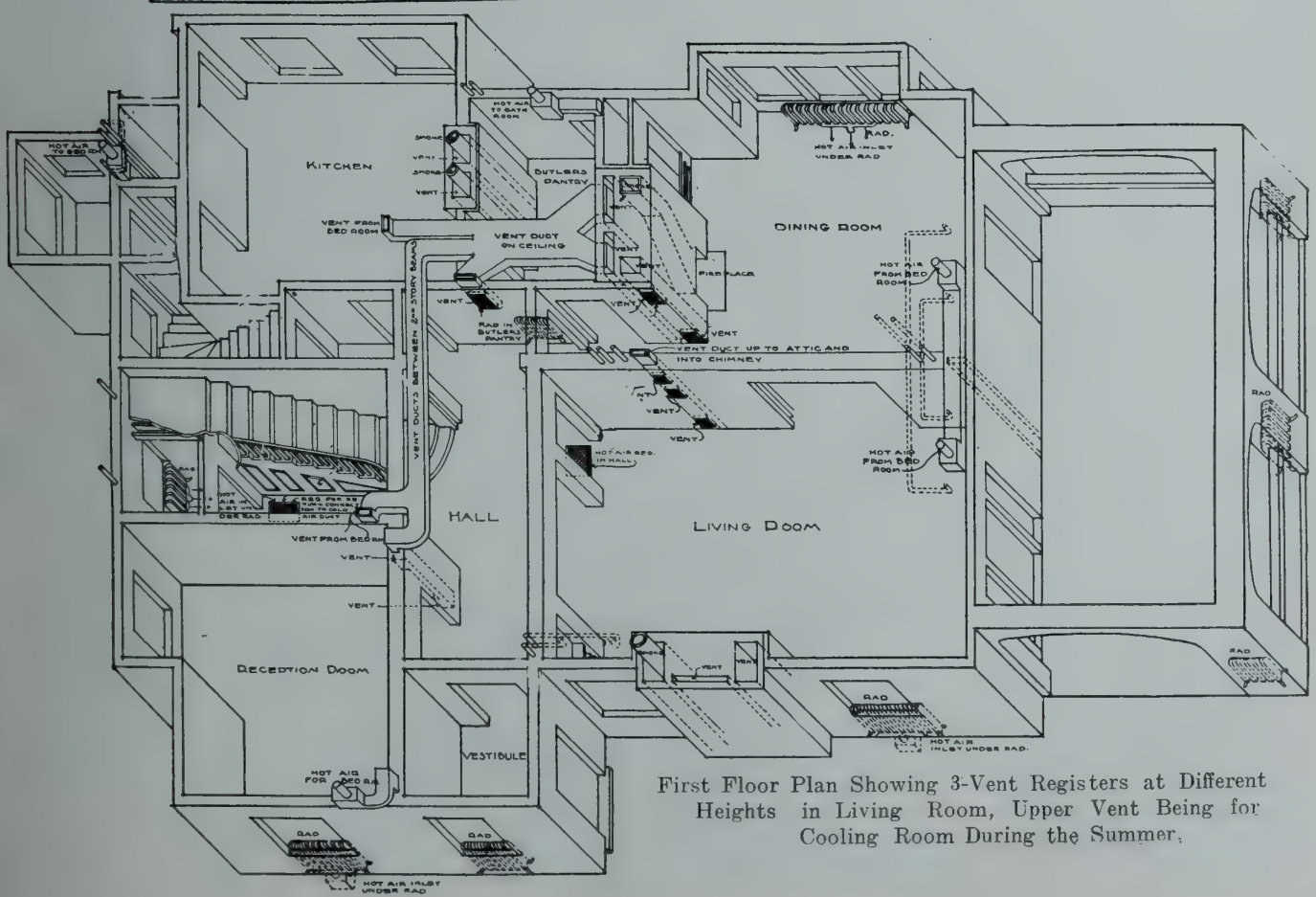


Detail of Heating Chamber and Connections, Showing Water Spray for Washing Incoming Air.

C. W. Webb, sales manager for Warden King, Montreal, is on a business trip to Winnipeg. In his absence A. W. Lamontagne is undertaking his duties.



Cellar Plan Showing Scheme of Indirect Heating.



First Floor Plan Showing 3-Vent Registers at Different Heights in Living Room, Upper Vent Being for Cooling Room During the Summer.

Letters from Correspondents on Trade Problems

The Editor Invites Short Letters and Sketches Describing Problems Met With or Original Methods of Doing Plumbing or Heating Work—Name of Writer Should be Sent Though not Necessarily for Publication.

THE DALE BALL COCK.

Bourne Bros., Revelstoke, B.C., ask Plumber and Steamfitter where the Dale Ball Cock is manufactured.

The Canadian Wolverine Brass Co., Chatham, Ont., are the manufacturers.—Editor.

COMPRESSING AIR IN TANKS.

"Plumber," Chatham, N.B., writes: "I have read with interest the article on "Water Systems for Country Homes" in the Plumber and Steamfitter, of April 1, and would like further information. I do not understand, for instance, about the air compressing.

"When the boiler is empty by pumping water out of the well into the tank or boiler, is there enough air in the boiler to make the pressure required?

"How much water would you have in a 140 gal. boiler at 30 lbs. on the gauge and how long will the pressure keep up? Certainly one might say it all depends on how much water is used, but figure on an ordinary house with six of a family.

"Would not an ordinary oscillating or clock pump suit for pumping the water from the well into the boiler?

"What would be the limit to lift water out of the well? Would it not be hard to pump when you would get a high pressure on the boiler?

"What size pipe would you require on the different parts of the job?

"Would you need any safety valves or check valves on the job?

"What size of a tank would be required for a family of six and how often it would be necessary to pump?

"I suppose there would be plenty room for expansion from the range boiler?

"If you will kindly answer these small details of the job some of us will be better able to understand the compressed air work. I am anxiously waiting for a reply through your valuable paper."

In answer to "Plumber" Chatham, N.B., I beg to furnish the following information respecting the Peerless Water System, manufactured by the National Equipment Company, 21 Lombard Street, Toronto.

(1) There will be found sufficient air in the tank without introducing any more, to generate and maintain the necessary pressure at all times, although the pumps supplied with these systems are all fitted with an auxiliary air cylinder, so that a little air may be introduced occasionally, if it is so desired.

(2) A 140 gallon tank, would, of course, only furnish a limited supply, and we have found that tanks ranging from about 250 gallons up are very much more satisfactory, the two chief reasons being that pumping is necessary only at much longer intervals than would otherwise be the case, and water for fire protection will be available in much greater volume than if the small tanks were used.

(3) Any pump capable of pumping water to an elevation of say, 75 feet, will easily develop the necessary pressure for the pneumatic tank.

(4) No shallow well pump should be used where the surface of the water is at a greater depth than twenty feet and where the water is lower than this, a deep well cylinder should be used.

(5) A pressure of forty or fifty pounds is easily attained with a hand pump.

(6) 1¼-inch suction pump, with one inch discharge to the tank and ¾-inch between the tank and the house plumbing are the proper sizes for the ordinary small job. No safety valve is required on the hand pump system, but should be used where any other power is in use. The check valve should always be placed between the tank and the pump, so that the latter may be taken apart at any time, without letting the water out of the former.

(7) We would suggest a tank of not less than 220 gallons and preferably 300 gallons for a family of six.

(8) There will be plenty of room for expansion from the range boiler.

M. J. QUINN.

LICENSING MASTER PLUMBERS.

Editor Plumber and Steamfitter.—In an effort to secure more authority for the Commissioners of the District of Columbia in the matter of licensing and registering master plumbers and gas fitters in the District of Columbia, the Master Plumbers' Association, the Commissioners, and the Chief Inspector of Plumbing framed a bill for presentation to the Congress of the United States as an amendment to the present law.

Under the power originally vested in them by an Act of Congress, the Commissioners can examine, through the Plumbing Board, applicants, and those making an average of 70 per cent. out of a possible 100 per cent. may be granted a license to practice the business of plumbing and gas fitting in the District of Columbia upon the payment of a license fee of $3, (good for all time) and a deposit of $25 to cover repairs by the District of cuts made in public space.

But under the present law the Commissioners are without authority to revoke the license of any master plumber or gas fitter should he prove an undesirable member of the trade, no matter what complaint they may receive against him.

The proposed amendment was presented both in the Senate and the House of Representatives, and referred to committees of both houses, but was not recalled before adjournment of the last session of Congress.

This amendment which has the united support of every reputable master plumber and gas fitter in the District as well as the Washington Board of Trade, the Chamber of Commerce, and the majority of the property owners here is as follows in full:—

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section four of the Act of Congress approved June eighteenth, eighteen hundred and ninety-eight, regulating plumbing and gas fitting in the District of Columbia, be, and it is hereby, amended by striking out all of said section four and inserting in lieu thereof the following:

"Sec. 4. That every license of a master plumber or gas fitter which is in effect at the date of approval of this Act shall terminate and become null and void five years after the date of said license. That the fee for a license as master plumber or gas fitter shall be five dollars. The term of such license shall be five years, and such license and bond of the licensee must be renewed at the end of each successive period of five years. Before such license is renewed or transferred the application for such renewal or transfer must be approved by the Commissioners of the District of Columbia and the old license canceled, and for each such renewal or transfer a fee of five dollars shall be paid to the District of Columbia. The said Com-

missioners are hereby authorized and directed to make rules and regulations governing the examination and licensing of master plumbers and gas fitters and the renewal and transfer of such licenses (provided that no examination shall be required of any licensee for the renewal or transfer of his license except after revocation as hereinafter provided), and shall have the power to revoke any license or renewal thereof for any violation, by the holder of such license, of law or of this Act or of any regulation made under authority thereof, or under any previous Act of Congress, after refusal by said holder to remedy the results of such violation within a reasonable time after notice so to do, and after due notice to such holder and a hearing before said Commissioners, and such action shall be in addition to any penalty provided for in this Act: Provided, That a revocation of license shall be for a period to be fixed by said Commissioners, but not longer than one year; at the expiration of which period, so fixed, the offending plumber or gas fitter shall again apply for license, be examined, pass said examination, pay the fee hereinbefore provided, and receive a new license before he shall engage in the plumbing or gas fitting business, unless otherwise determined by said Commissioners."

The writer feels assured that at the next regular session of Congress beginning next December, when this bill is presented by the Committees, it will pass without great change in its present wording, and without much opposition.

J. F. BRADY,

Washington, D.C.

CONDEMNS WROUGHT AND GALVANIZED PIPE.

Editor Plumber and Steamfitter,—Your communication to hand. Some 15 years ago an office building of 14 stories was erected in our city and the "Durham" system installed. The 2-inch basin lines have been cut in numerous places and found to have been entirely rotted out. I am at a loss to say as to whether this pipe was galvanized iron or tarred.

The same condition prevailed in the old St. Nicholas Hotel of our city which has been renovated and turned into an office building. I am told by the contractor and journeymen plumbers employed on this work that the vents and wastes were so rotted out by electrolysis or other causes, that when the tiling was taken from around the pipes, they were found in such a condition that you could stick your fingers through same in numerous places. Some six or eight weeks ago I mailed J. K. Allen editor of the Domestic Engineering, Chicago, a sample of pipe taken from one of our buildings.

I will say for the information of your plumbers in Canada that it is about time that all plumbers should take this matter up and investigate it as thoroughly as I have done, and by so doing they will find that wrought iron or even galvanized iron is not the proper pipe to install in large buildings.

EDW. QUINN,
Supervisor of Plumbing.

St. Louis, Mo., April 26.

NEW STOP AND WASTE COCK.

The Kelly & Jones Co., Greensburg, Pa., have secured patents for a universal stop and waste cock, which, although not varying materially from the standard high grade stop and waste cock in valve construction, differs considerably as pertains to the handle or operating mechanism. This is accomplished by employing a lever handle of such construction and material as to be easily broken at a point which, when broken, leaves the regular tee handle. It can therefore be used either with a tee or lever handle.

Its adaptibility for use as a right or left cock is accomplished by the instant removal and changing of the handle from right to left and vice versa when the cock is open. A set screw firmly engages the handle to the body, when desired unremovable, thus obviating any danger of same becoming detached.

The drain outlet is threaded ready for the connection of the drain pipe. It is made for iron or brass pipe in standard sizes from ½ inch to 2 inches. As a result of this small improvement of a standard article, which is used by millions, a great reduction in time and expense is made possible. This is illustrated daily in cases where a particular type of cock is necessary and the work is in a rush as the universal can be made to adapt itself to the particular case, without the necessity of securing the special cock. This universability naturally does away with the necessity of carrying an assorted stock.

THE BOY GOT A JOB.

A good story is being told on Fred Armstrong, one of Toronto's best known master plumbers. Fred had advertised for an errand boy and, as it happened he was talking to a customer when the boy came in. Thinking he wanted to buy something, he excused himself, and, going over to the boy, asked him what he could do for him. The boy told him he came in answer to his advertisement, and asked for the job.

Fred was annoyed at being disturbed while talking to a customer and said to the boy: "You go outside and walk a block. If I call you back, I will hire you; if I don't you just keep right on walking."

The boy did as he was told, but, going out, he picked up a gas fixture standing near the door and putting it on his back started down the street.

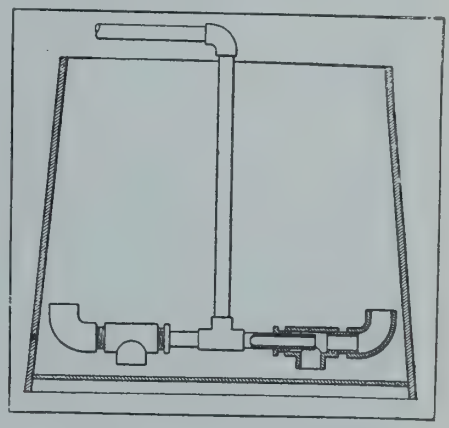
Before he had gone ten feet, however, Fred was after him, yelling, "Come back! Come back!"

The boy came back, took off his coat, and asked where he wanted him to work—downstairs or upstairs, or where?

Fred took one good look at him and said: "I guess I'll hire you. Never mind putting your coat on. Start right in."

STOPPING NOISE IN STEAM PIPES.

When steam at 70 or 80 lb. pressure is turned into a tank of cold water for heating there will be a very disagreeable noise. A certain plant using a large quantity of hot water had to heat their water with steam, and to eliminate the noise they constructed a device as shown in the sketch. As a siphon ejector will make no noise of any consequence, this principle was applied, says the Practical Engineer. The ⅜-in.



Noiseless Steam Water Heater.

main pipe carrying the steam into the tank was fitted with a tee on the bottom end, and into this tee two nipples were fitted with long threads on the outer ends. These ends were fitted with two ⅜- by 1¼-in. bushings, allowing the ends to extend through them. On these bushings were screwed two 1¼-in. tees with a short nipple and an elbow as shown in the sketch.

When the steam is passing in a jet at the end of the small pipe in the large tee, the water will be drawn up from the bottom of the tank and upward at the sides through the ell and return to the bottom of the tank again down the centre, causing a continuous circulation until the water reaches the boiling point. The noise made by the appliance when at work is no more than that made by an ordinary-sized injector or a siphon-ejector.

Winnipeg Public Lavatory Needs

Over-crowded Condition of the One Station Winnipeg Has—Large Foreign Population—Saloons Secure Business by Supplying Conveniences—Vacant Buildings Suffer—Waiting for Some One to Take Initiative.

In conversation a few days ago with one of Winnipeg's leading clergymen, the following remark was ventured:—"Winnipeg's crying need to-day is proper convenience stations for the accommodation of the public."

If this statement is true there is something radically wrong with public sentiment in the city. Rarely do we hear of anything along this line. Such a remark to the majority of citizens would lead them to think that they were spoken by some fanatic or extremist. It is true that no great reforms are instituted without due opposition or at least apathy on the part of many.

Winnipeg's Overcrowded Public Lavatory.

The city built a station a few years ago, when pressure was brought to bear upon the council by a limited number who were in a position to see that such a movement was very urgent. But that the present station is quite inadequate to fulfil the requirements of such a city as Winnipeg, and that there is great need of additional stations in different parts of the city, must certainly be felt by many.

A Cosmopolitan City.

Winnipeg has a population of 125,000, over one-third of which is foreign. In the city there are more homeless people than in any other city in Canada. We need only know the tendency of the foreign peoples, and the tendency of human nature to conclude results from these two facts. Foreigners live congestedly in the down-town sections, and homeless people wander and often live in down-town streets and in centres of greatest attraction and interest. That those who live in the most congested way imaginable have thorough sanitary equipments in their dwellings is absurd, and that such sections are the most formidable breeding spots of disease and crime is well known.

There is no city in Canada to-day that is in as great a danger of outbreaks of this kind as Winnipeg, yet in those portions of the city where the greatest precaution should be taken to carry away the fast accumulating filth, there is no public station where men or women may go for their own comfort and health.

Not long ago a young man in business in the city bought a dwelling house, of modern architecture and with good plumbing conveniences, which was situated near a foreign section. The house was empty and the water was turned off. Unfortunately the owner left the house unlocked by mistake, and did not revisit it for several weeks. When he returned he found that the public had been making use of his house. The closet was in a horrible condition, and the floors were littered with filth. This instance speaks louder than anything that might be said regarding the need of stations in these sections.

Forced to Use Hotels.

The requirements of those who wander the streets in crowds every day of the week, are very largely met by the hotels. Winnipeg is well supplied with hotels. There is one licensed house for every thousand of the population, while in Toronto there is only one licensed house for every three thousand. Lack of interest here may be attributed to this fact somewhat. Many hotels are glad to have people come in and use their closets in the hope that the trade might be benefited. From a moral standpoint, this is where the argument begins. It is a disgrace to any city that a man or woman should be obliged to enter a hotel for personal comfort. A man may or may not reluctantly do so, but many a one enters a hotel to use the lavatory who would not enter it for any other purpose. That the hotel, on the other hand, is under obligation as a public house to furnish those specific conveniences to the public is a question. Those conveniences are for the guests, and the only reason that the public is not barred in more instances is the fact that the bar or some other questionable traffic would suffer.

The writer knows of an instance where a young man entered a Main Street hotel one night at eleven o'clock to use the lavatory. Before he could ask direction to the same he was asked to participate in a traffic which has been the curse of the world since its earliest dawn. On another occasion the same individual found the way to the lavatory of another hotel on Main Street. The closet was in such a filthy condition that it could not be used. The broken floor was covered to the depth of some inches with water that should have been at the bottom of a sewer. The plumbing equipment was broken and badly dilapidated. The whole basement in which the closet was placed was in an extremely insanitary condition. The closet was taking the place of a public lavatory.

Hotels Ask for Free Water.

A complaint was lodged recently from one of the largest hotels in the city, that the public was making such free use of the lavatory that the water rate was becoming a burden, and application was made for a reduction. The instance was cited of the Nicholas Hotel in Minneapolis, which made a similar request and was granted it. It must be said to the credit of the Winnipeg council that the petition was not granted since it simply meant the shirking of responsibility on their part.

Controller Harvey, in speaking of the above case said: "We, as public benefactors, are obliged to supply such accommodation as the hotels afford. Something must be done along the line of public convenience stations within a year. But the difficulty is that the funds for such purposes are from capital accounts, and the city council has no right to use those funds without the consent of the citizens. A by-law to expend money in that way must come before the people, and as yet we have heard nothing from the people. It may be that the council, by taking the initiative will propose public convenience extension within a year, but other public matters are pressing at the present and these make the consideration of public comfort stations impossible."

Somebody Should Take Initiative.

When the time comes, as it surely will, to build one or more stations, two important things will have to be considered. The first is the matter of location. It is certain that wherever it is built it will be extensively used, this is proven from the fact that the present station is overcrowded. And it is certain also that the undesirable overcrowding will be eliminated when one or two more stations are in use in other parts of the city. About one year ago the chairman of the board of works called for estimates from a contractor as to the cost of two underground stations, one to be built on the corner of Logan Ave. and Main St., the other on the corner of Portage Ave. and Main St. The estimated cost was $12,848.45 On account of the high cost, and the pressure of other public construction work, and the lack of demand for the stations on the part of the people, the matter was dropped indefinitely. The chairman of the board of health, F. J. C. Cox, said, regarding this relinquishment on the part of the council, "We never intended to dismiss the idea of public lavatory extension, but although we realized the need of such a movement, we have come to a period in our history when we must be careful of our expenditures. We have been building our city out of public funds at a terrific pace. We have made as large expenditures for public purposes in the past ten years as any other city on the continent has done in the past twenty-five years. And for us to vote over $12,000 for public comfort stations without counting the cost would be anything but a sane action. These things will come but we must go slow."

Mr. Cox was asked if he did not think that a station at the corner of Portage Ave. and Main St. was as urgent as some street paving that was being undertaken at the present at a greater cost? He said, "Well, at any rate, the demand for the pavement is greater."

Winnipeg's Public Lavatory.

The station now in use, a picture of which we publish, is admirably situated for the accommodation of men. On one side of it is the city hall, on the other is Market St., one sidewalk of which leads from Main St. to the station. It can be easily seen from Main St., being about 100 feet west, and the majority of those who use it turn in from that street. Market St. is one of the busiest side streets in the city, and opens into the Market Square immediately west of the station. The station is essentially central and sufficiently conspicuous to be of good public service. No fault can be found with its location for it was needed badly in that particular quarter. It is estimated that 2,000 men visit the lavatory daily and the four closets are almost constantly in use. The west end of the lavatory is open as a women's toilet but it is rarely used. It is neither happily situated nor attractive as a women's station. The general character of the women who visit the station may be estimated by the fact that it was ordered to be closed at 8 p.m.

The lavatories are all underground and the construction is, with one or two exceptions, faultless. The entrance is of red brick with tile roof. Glass swinging doors open to the top of the stairs leading down to the lavatory below. The steps are solid cement and the enclosed stair-case is roughcast plaster. The floor is polished concrete with inlaid stones. The walls are covered with white-faced enamel brick to the height of four feet from the floor, and the remainder is heavy brown burlap. The interior of the men's section is 30x15 feet in area and the walls are about 8 feet 10 inches in height. There are four closets, separated by marble walls, six urinals of massive white enamel, and two wash bowls of white enamel. The whole interior is quite attractive, with the nine electric lights enclosed in blurred glass globes serving to beautify as well as illuminate.

One objectionable feature is the lack of proper ventilation. No provision was made for ventilation whatever by the builders, and the only air passage is by way of the entrance, at the top of which the doors have to be kept open to allow fresh air to come in. To offset the ill-ventilation, disinfectants are used and a strong odor results. It would have been a simple matter to have made an opening above, but such a thing was not attempted.

The women's section is much smaller than the men's, being about 10x20 feet, with the same height of wall. There are only two closets in this section and two wash bowls. These are sufficient to accommodate all who call, in fact, on many days they are never used.

The plumbing equipments are all that could be desired, and the flushes are strong, making it satisfactory from a sanitary point of view. A caretaker is employed for each section and "cleanliness" is their motto.

The men's section, which is so much in use, is never unpresentable, and the fixtures are rarely out of repair.

The station was built by the city engineer department, the permit being passed in 1905. It was opened for use in April, 1907. The total cost of the structure was $7,903.73, being a few hundred dollars under the estimate. The plumbing was done by Cotter Bros., of Winnipeg, and the equipments are the best that could be had.

HEATING AND VENTILATING PRISONS.

Dr. J. S. Billings, in his work on "Ventilation and Heating," states in regard to the heating and ventilation of prisons that "there are two essentially different plans of prison construction in use. In the first (known as the Pentonville or the Auburn system) the cells are arranged in blocks of several tiers in height, and this block is surrounded by an outer building, between the walls of which and the doors of the tiers of cells in each side is an open corridor, not divided by floors, corresponding to the floors of the several tiers, the area of this hall being unobstructed from the floor of the first story to ceiling of upper story.

The other type of prison construction is that in which the cells are arranged in tiers on each side of a central hall, the outer walls of the cells being formed by the outer wall of the building.

The Strathcona City Council has decided to offer the Government a free site for the proposed armory, for which the Government has appropriated $10,000.

Gossip of the Canadian Trade

Items of Interest Gathered From Correspondents From Cape Breton to Vancouver Island—Letters From Subscribers With Trade News Solicited.

C. Lenghin & Fils, plumbers, Quebec, have assigned.

Proulx & Chartie, plumbers, Montreal, have dissolved.

Lepage & Briere, plumbers, Montreal, have been registered.

Dr. Amyot says London's water supply is all right if protected.

Campeau & Cousineau, plumbers, of Montreal, have been registered.

Manhire & Quigley, plumbers, Westmount (Montreal) have dissolved.

The Galt water commission is asking for tenders on two tons of lead pipe.

An expert will be engaged to report on the efficiency of Kingston's waterworks.

Rice, Graham & Co., electrical contractors, Toronto, are succeeded by Rice, Greene & Co.

W. E. Skinner is promoting the establishment of a steam heating and distributing plant in Winnipeg.

Brickman & Baker, plumbers, Stratford, have dissolved partnership. Mr. Baker will continue the business.

The J. Colbert Co., Victoria, have the plumbing and heating contract for the new Pemberton block at that place.

Wilson & Cousins, brass finishers, Toronto, sustained a small loss by fire recently. The premises were insured.

The Dixon Heating and Lighting Co., Toronto, manufacturers of gasolene lights, etc., has made an assignment.

The defendants in the Winnipeg plumbers' case in which the plaintiffs Cotter et al, were awarded damages in the court of appeal for loss sustained through picketing, have definitely decided to appeal the case to the Privy Council.

Marshall & Sime, plumbers, of Fort William, are succeeded in business by W. B. and H. R. Sime. John Marshall has opened up a plumbing establishment at Port Arthur under the name Marshall & Co.

The Galt water commission is providing work for the plumbers. At a recent meeting it decided that all water pipes leading to closets should be fitted with a shut-off, which would be used in cases of leakages. As there are more than 500 services in Galt it will be quite a job to install all the shut-offs.

There ought to be considerable work for Chatham, Ont., plumbers this season, in instaling sanitary conveniences in residences. While there are still plenty of houses without them, experience is rapidly showing the owners that a house for rental without sanitary conveniences is practically a drug on the market.

Scott & Bennett, plumbers and dealers in plumbers' supplies, Galt, have let the contract for a brick block on South Water street to replace their present building. The new block will contain three stores and will be three stories high. One store will be used by the present firm and the other two will be to rent.

John Cowan, inspector of heating and plumbing for the Dominion, died very suddenly at his residence, in Ottawa, on April 16. He was employed at one time with John Garth, Montreal, and while with them one of the first things he did was to fit up the experimental farm at Ottawa, with its heating and plumbing appliances. He afterwards entered the Public Works Department, being appointed to the position he occupied at his death.

The following are the names of the master plumbers attached to the master plumbers' incorporation bill now before the Nova Scotia Legislature: G. A. Wooten, George Perrin, W. S. Craig, John O'Toole, Richard Kinsman, James Farquhar, all of Halifax; Frank Dexter, of Truro, and John Ritchie, Dartmouth. A clause in the bill states that the association shall have the right to purchase real estate to the value of $10,000 and to have such other powers as are usually held by such incorporated associations.

The question of heating and lighting all the Toronto University buildings from a central station equipped with a complete local plant is under consideration by the Board of Governors. The enterprise is a large one and the governors are investigating the whole situation. It is believed such a system would prove a decided saving in expense, and would, moreover, prove more generally satisfactory than the present arrangement. An expert engineer from Boston will visit Toronto to look into the project and make a report upon it.

A special committee of Vancouver's city council has been appointed to frame a new plumbing by-law. The new by-law is to be based largely on the old by-laws, with numerous technical changes and a few original clauses covering features borrowed from other cities. Each inspection by the plumbing inspector will be charged for at the rate of one dollar. There is likely to be included a restriction clause, under which all plumbers will be required to prove their qualifications, when a certificate will be issued, without which no plumber will be permitted to do domestic plumbing.

F. R. J. MacPherson, R. MacGregor and Mr. Miller waited on the Peterborough fire, water and light committee lately with regard to a petition for the licensing of electricians. They ask that a by-law be passed providing that all persons doing wiring and fitting for the purpose of providing the city with light and heat be compelled to secure from the city a license to do such work for which they shall pay a fee of $25, and that each contractor shall be compelled to attach to the job or the contract a label bearing his license number and name, andl such contract shall be open to the inspection of the board of fire underwriters and any person doing work without the above license shall be liable to a fine or imprisonment. This is as much to protect the public as it is to keep only properly qualified men doing the work. The men mentioned are plumbers as well as electricians and are among the foremost in the city.

The Halifex Board of Warks opened tenders a few days ago far a large quantity of iron pipe and valves. The tenderers for the water pipe were: The Canadian Iron Corporation, Londonderry; Stonely Coal and Iron Co., England; Wm. Stairs, Son and Morrow, Halifax; Watson Jack & Co., Montreal; J. Coates & Co., London; Canada Foundry Co., Toronto; L. H. Goudey & Co., Quebec; W. Beverley Robinson, Montreal; D. Y. Stewart & Co., Glasgow; and R. D. Ward & Co., Philadelphia. The tender of W. Beverley Robinson, being the lowest was recommended to the City Council for acceptance. The quantities and the prices were: 87,000 feet of 12-inch pipe at $28.70; 25,000 feet of 9-inch at $29,00, 10,000 feet of 6-inch at $29.80, and 500 feet of 3-inch at $31.67 delivered. The tenderers for supplying iron socket valves were: Stewart & Co., Canadian Foundry Co., W. Jack & Co., and Stairs Son and Morrow. The Canadian Foundry Company offered to supply 25 6-inch valves at $9.65; 6 3-inch at $4.55 and 15, 12-inch at 38.65, and the tender being the lowest was recommended for acceptance.

AN ONTARIO ASSOCIATION POSSIBLE.

Provincial Vice-President Cooper, of Toronto, discussing the suggestion that a meeting be held at Windsor, in June, during the same week as the National Association of Master Plumbers of the U.S. hold their convention at Detroit, expresses his preference to holding an executive meeting of Ontario plumbers at Windsor at that time and holding the convention at the usual time in July or August.

New Buildings, Water and Sewage Systems

Buildings to be Erected by School Boards and Other Public Bodies—Municipal Enterprises to be Extended or Undertaken.

Public Buildings.

A new public building will be erected at Portage la Prairie.

Bank Street Presbyterians will build a new church at Ottawa.

A $16,000 addition is planned for the Revelstoke, B.C., hospital.

Plans for Montreal's new technical school have been completed.

Fern Ave. Presbyterians, Toronto, will erect a $40,000 church.

The Baptist congregation, Regina, has decided to erect a new church to cost $48,000.

The Ontario Parliament Buildings will be enlarged by the addition of a $750,000 wing.

G. F. Turney, Trenton, has the contract for building a $25,000 school at Haileybury.

Christ Church congregation, Deer Park, Toronto, will erect a new $20,000 edifice.

The congregation of the Dufferin Ave. Presbyterian church, Winnipeg, will erect a new church.

W. J. Taylor, Woodstock, Ont., has been awarded the contract for the new post office at Welland.

It is reported that a $150,000 building will be erected at Vancouver to house St. Mark's College.

A new building is to be erected by St. Paul's Anglican Church, Toronto, at an estimated cost of $150,000.

A new library and public hall, towards which Andrew Carnegie has donated $7,500, will be built at Lucknow.

Plans for enlarging the smallpox hospital in London at a cost of $3,000 were submitted to the board of health.

The B. C. Government has promised to subscribe $15,000 to the erection of a new $45,000 school at Revelstoke.

Architects Ellis & Connery, Toronto, have prepared plans for a $19,000 school building to be erected at Trenton.

The officials of the Winnipeg Children's Home are contemplating either a new building or extensive additions.

J. Bruce Smith, Inspector of Prisons, has ordered an addition to the court house at Belleville at a cost of $30,000.

Herbert H. New, Hamilton, Ont., is preparing plans for the new Herkimer Baptist Church. Estimated cost, $22,000.

The contract for the new township hall at Ridgetown, Ont., has been awarded W. E. Best, of Thamesville, at $3,467.

A by-law will be submitted to the Chilliwack, B.C., ratepayers to raise $5,000 for the erection of a new school.

The Fathers of the Resurrection, who have charge of St. Jerome's College, Berlin, will greatly enlarge the building.

Fernie city council have decided that tenders should be taken at once for the erection of the new municipal buildings there.

Architect Chas. Bernier, Montreal, has prepared plans for the erection of a Roman Catholic Church in Ville St. Paul.

A four-room addition to Shakespeare Ward School, Stratford, at a cost of between $15,000 and $20,000 will be built.

Oshawa ratepayers have passed a by-law authorizing the expenditure of $20,000 for the erection of a new high school.

F. W. Mercer, of Minnedosa, Man., has obtained a contract at $16,000 for the erection of a new six-roomed school building.

White & Foulds, Sherbrooke, Que., have prepared sketches for the proposed extension to the Sherbrooke Protestant Hospital.

Jas. A. McDonald, Lethbridge, has prepared plans for a new town hall to be erected at Magrath, Alta., at a cost of $5,000.

The University of Saskatchewan will be located at Saskatoon, and the buildings to be erected must be ready by September.

The trustees of St. John the Evangelist Church, London, have purchased a lot on which they intend to erect a new church.

The Montreal Catholic School Board will apply to the Quebec Legislature for authority to borrow $150,000 to build new schools.

Ottawa will seek authority to raise $12,000 by debentures for the necessary improvements and alterations at the Isolated Hospital.

J. H. G. Russell, Winnipeg, has submitted plans for the proposed new St. Andrew's Presbyterian church at Yorkton, Sask.

A by-law to raise $248,000 will be submitted to the ratepayers of Toronto for the erection of new fire halls and police stations.

Architect Wm. G. Murray, London, is preparing plans for a $5,000 one-storey school house to be erected in Dorchester, Ont.

Plans are being prepared and work will be commenced at once on the erection of a new church at West Burnaby, near Vancouver.

The Franciscan Sisters of Winnipeg are considering the erection of a Home for Women, adjoining the Immaculate Conception church.

Geo. A. Proctor, Sarnia, has been awarded the contract for the new post office and customs building to be erected at Glencoe, Ont.

The general contract for the addition to be erected to the new jail at Bordeaux, Que., has been awarded to J. B. Pauze Co., Montreal.

The Moncton School Trustees are considering the question of issuing bonds to the extent of $15,000 for additional school accommodation.

A by-law has been passed to issue $5,700 to provide for the cost of enlarging and equipping the isolation hospital at Brockville, Ont.

The trustees of the House of Industry, Toronto, have made application to the Board of Contol for a grant of $50,000 to enlarge the institution.

The Government of Quebec has decided to erect an addition to the Jacques Cartier Normal School at Lafontaine Park, at a cost of $60,000.

Plans have been submitted in the competition for the proposed new school building at Dauphin, Man., but no selection has yet been made.

The congregation of St. Bartholomew's church, Ottawa, will erect a new church at Rockcliffe, on a site which has been donated for that purpose.

The Presbyterian congregation, Port Colborne, propose to expend the sum of $3,500 for remodelling their church, which was recently damaged by fire.

Architects Ross & Macfarlane have prepared plans for the new church of St. Matthias to be erected at Montreal. The building will cost $45,000.

Tenders are being called for the new Sunday school for the Augustine Presbyterian church, Winnipeg. The building will cost from $20,000 to $25,000.

Architects Hutchison & Wood, Montreal, have prepared plans for a building to be erected at the Protestant Infants' Home. The structure will cost $50,000.

The Strathcona city council has decided to offer the Government a free site for the proposed armory, for which the Government has appropriated $10,000.

The board of Havergal college, Winnipeg, have decided to build a three-storey addition to the college this summer. The new structure will cost $35,000.

It is probable that there will be erected at Winnipeg this year either a new provincial asylum for the insane or a large addition to one of the present buildings.

The contract for erecting an addition to the Harkins Acadamy, at Newcastle N.B., has been awarded to Newcastle contractors, who will do the work for $47,000.

By-laws will be submitted to the ratepayers of Galt, for $15,000 for an addition to the central school and $20,000 for a new wing and improvements to the hospital.

The Vancouver Associated Charities propose taking immediate steps to secure funds for the building of an infirmary ward in connection with the general hospital.

The Berlin Public School Board has decided to erect two four-room additions to the Rosland Avenue and the Margaret Avenue schools at a cost of about $21,000.

The congregation of St. Bartholomew's Church, Ottawa, will erect a new church on Buena Vista Road, Rockcliffe, on a site which has been donated for that purpose.

A site for a sailors' home has been requested of the Toronto Board of Control by the Upper Canada Tract Society. The proposition is to erect a building to cost $15,000.

Work is to be commenced at once on the new addition to St. Mary's Academy, Winnipeg. The building will be four storeys high, of brick construction and will cost $80,000.

The C. N. R. and G. T. P. are announced as having completed arrangements for the construction of a large union station and hotel at Calgary.

In all probability a large wing, to cost $200,000 will be built to the Kennedy St. court house, Winnipeg. It is understood that work on the structure will be commenced in the early summer.

At a meeting of the West Toronto Collegiate Institute Board. Chairman Ellis reported that the cost of putting the institute into repair and adding eight rooms, including gymnasium and lavatories, would be $45,000.

Four large buildings are being erected in Vancouver. The Mount Pleasant Presbyterian church, $40,000; Seabold's brick apartment house on Thurlow St., $20,000; two-storey addition to Evans' Coleman and Evans' building, on Cordova St., $25,000; office building for Dr. Tunstall, on Granville St., $20,000.

Building prospects are excellent at Chatham. Two large contracts have been let recently: The new Ursuline College auditorium, and a big extension to the Chatham Wagon Co., practically doubling its capacity. The first contract is stated to be worth $27,000, while the other is pretty nearly as much. Throughout the country nearby much building is going on.

Municipal Undertakings.

Work has been commenced on Toronto's trunk sewer.

An up-to-date sewerage system is proposed for Palmerston.

Edmonton will establish a filtration plant in connection with its waterworks system.

Work will be commenced at once on the central portion of Revelstoke's sewerage system.

Thessalon, Ont., will spend over $9,000 on a waterworks and electric lighting system this year.

Revelstoke, B.C., has taken over the gas plant instaled there by the Canadian General Electric Co.

Victoria ratepayers will probably be asked to vote on a by-law to raise $50,000 for sewer purposes.

Three hundred new water services were installed at Vancouver during the first three months of this year.

Tenders are asked before May 19 for the construction of a waterworks system and a main sewer at Estevan, Man.

The Board of Trade of Orillia is asking for the immediate construction of a number of sewers in the central portion of that town.

Yellow Grass, Sask., ratepayers have passed by-laws for $20,000 for a waterworks system and a $1,000 bonus to the electric light and power plant.

Waterloo's town engineer is preparing a profile in connection with the construction of a sewer on Victoria Street and tenders will shortly be called for.

Yarmouth Town Council decided to borrow $12,000 for the extension of the town water main and $6,000 for the completion of the Milton engine house.

The B. C. Provincial Government has given Vernon permission to take 50 inches of water from Long Lake for domestic purposes and for fire protection. Plans for a new water system will, therefore, be made.

The Edmonton City Council awarded the contract for the supply of the piping for the new power plant to the Babcock & Wilcox Co. at $6,770 for the piping complete and erected.

Tenders will be received until May 1 for trenching and back-filling necessary to be done in connection with New Liskeard's waterworks system, as required for making house connections; and for tapping the mains, supplying all necessary material (except brass supplies), making connections, etc., as required for making house connections.

The McKnight Construction Co. has successfully laid eight hundred feet of the outlet sewerage piping into the lake, at Haileybury, so that now the sewerage of the town can be carried away without danger to the inhabitants. By next year the whole town will practically be well drained with a modern system of sewerage. Haileybury already possesses a waterworks system.

General Building Notes.

N. Hillary will build a $10,000 dwelling at Toronto.

C. S. Boone, Toronto, will build a $26,000 dwelling.

Wm. T. Harris, Toronto, will build a $15,000 residence.

H. M. Millman will erect a $60,000 block at Winnipeg.

J. A. Coulter will erect a $7,000 residence at Winnipeg.

W. K. George will build a $15,000 residence at Toronto.

J. A. Russell will build a $30,000 residence at Vancouver.

J. A. Goddard will build a $25,000 warehouse at Toronto.

Hector Gunn will build a $12,500 apartment house at Toronto.

H. S. Mara will erect three dwellings at Toronto to cost $10,500.

J. C. Sears will erect a $30,000 apartment house at Ottawa.

W. F. Forster will erect five dwellings at Toronto, at a cost of $13,500.

R. T. Brown, Toronto, will erect three dwellings to cost $13,500.

T. P. Stewart will build seven dwellings at Toronto to cost $21,000.

The Pemberton block, a $150,000 structure, will be built this summer.

W. W. Cruise, Windsor, proposes to erect a three-storey apartment house.

R. C. Vaughan will build five pairs of dwellings at Toronto to cost $15,000.

Construction will soon begin on the $75,000 Y.W.C.A. building at Montreal.

A new hotel to cost $1,500,000 is to be commenced this summer at Toronto.

T. O. Johnston, of North Dakota, will erect a three-storey brick block at Lethbridge.

Harvey, Pherrill & Co., Toronto, will build three pairs of dwellings to cost $12,000.

Dr. S. A. Weismiller purposes building a modern apartment house in Parkdale, (Toronto.)

Wm. Heap, Toronto, will spend $15,000 on the erection of five pairs of dwellings.

Weismiller & Mackenzie Bros., Toronto, will build four pairs of dwellings to cost $18,000.

Wm. Bownass, Victoria, is to build a handsome building which he will occupy on its completion.

Six attached dwellings will be built at Toronto by M. S. Thompson at a cost of $25,000.

A new building for departmental store purposes will be erected by W. H. Scroggie, Montreal.

Grand Forks, B. C., is experiencing a building boom as a result of the big fire there some time ago.

Geo. Hamilton will build a $10,000 block at Haileybury, the lower floor to be used as a post office.

One hundred new houses will be built in Galt this spring and already the builders are hard at work.

James H. Hogue has secured the contract for the extension to the Emerson & Fisher building at St. John.

Architects Daoust & Lafont have drawn plans for a hotel building to be erected for A. Dufresne, at Three Rivers.

The contract for the extension to be built to the Royal Hotel, at St. John, has been awarded to B. Mooney & Sons.

Thomas H. Wiley, St. Catharines, has prepared plans for three dwellings to be erected for Peter Forsythe at a cost of $5,000.

$18,000 will be spent on the erection of a business block to be built by Lee Cheong, Lee May and Lee Yan You, at Victoria.

The Bank of New Brunswick has let the contract for its new building at North Head, Grand Manan, to A. E. Hamilton, of St. John.

Wm. G. Murray, London, Ont., has prepared plans for a residence to be erected at Ayr, Ont., for Dr. Ward Woolner. It will cost $4,500.

Dennison & Stephenson, Toronto, have prepared plans for the Nurses' Home and new wing to be erected in connection with the hospital for incurables.

W. A. Noble, Hamilton, has taken out a permit for the erection of a $2,600 dwelling, also for six brick dwellings to be built at the corner of Clyde and Cline Streets, at a cost of $6,000.

Ald. Carson, Kingston, states that he will erect a brick block of six cement houses, on the corner of Queen and Clergy Streets. The block will be two storeys high.

It would appear as if Kingston is about to experience a building boom, as the returns at the city engineer's office show that already sixty-five permits have been issued for buildings, and fifty permits have also been issued for plumbing alterations.

Building at Victoria is brisk, Forty new houses can be counted in one new section opened up last fall and at a low estimate these houses will represent a building value of $100,000. All this building means activity in many lines of trade, and the plumber will come in for a good share of it.

PLUMBING AND HEATING MARKETS

MONTREAL.

April 29.—The good movement, noticed in our last issue of all plumbing and heating lines, continues. Permits for April were higher than the average, and in addition to a number of smaller contracts placed, some large business is being tendered for. Jobbing work is likewise very good, and this with the stocking up that plumbers are now doing preparatory to their hard work for the season, makes supply houses very busy. Outside points are also buying well, especially Three Rivers and Quebec City. The first boat out with soil pipe left last week, and good lots of assorted material are following.

All lines are moving well, especially soil and lead pipe. There are no changes in prices, with the exception that manufacturers have issued a new list of net prices on low-pressure steam and hot water boilers. Solder is still very firm.

SOIL PIPE—A good movement characterizes this article. Boats are now leaving the port, and outside points receiving their consignments. Good orders are being received from various parts of Quebec, including Three Rivers. There are no changes in discounts, and we quote: Light, 3 to 6 in., 60 off; medium to heavy, 2 to 6 in., 70 off; 8 in., heavy, 40 off.

LEAD PIPE—Lead pipe is moving well, and showing signs of a promising spring demand, Plumbers are commencing to stock up, but most of the material is still being used. Prices are unchanged with the market firm. We quote: Pipe and waste at 27½ off; traps and bends at 50; calking lead at pound.

SOLDER—Good lots are now being ordered, and the prospects look promising for a continuance of the demand. The market is very firm, but prices for fair-sized lots are unchanged at 19½c for half-and-half, and 18½c for wiping.

IRON PIPE—Good bulk is now moving out, although the spring demand has not yet become so pronounced in this as in other lines. There is no change in quotations, and discounts are from ¾ in. to 4 in., black, 72½ off; galvanized, 62½ off.

RADIATORS AND BOILERS — Fair business is being done for this time of the year. We continue to quote radiators and boilers at 60 off. Steamfittings about 70. Manufacturers have issued a new list of net prices for low-pressure steam and hot water boilers: 1,000 sq. ft. boilers. steam, are now $170; water, $160; 2,000 ft., steam, $270; water $260.

BRASS GOODS—Buying has improved in the better grade articles. The market is firm, and we quote: Compression work, high grade, 60 and 10 off; standard, 70; fuller, 75 off.

METALS—There is no change in the metal markets, Prices are fairly firm, and orders good. We quote: Ingot copper, 14c; ingot tin, 32½c; lead, $3.85; pig iron, Middlesboro No. 3, $16.50 to $16.75; Summerlee, $18.75. Heavy scrap red brass is 10c; light copper, 10c; heavy lead, 2¾c.

TORONTO.

April 30.—The plumbing situation just now is steadily active. While trading is as free as it was two weeks ago, there is not the big advance then noted. However, the future will look after itself, and from present indications in the building world the future is going to be busy. This will bring plenty of grist to the plumbers' mill and manufacturers and supply men are preparing for a rush of orders later on.

In heating lines booking continues for future delivery, though there are some satisfactory orders for immediate delivery and work in reconstructed houses. Roughing-in is opening out and it looks as if the next three months will see a great deal of this kind of work going on.

There are no price changes to record, and there is a dearth of news among the trade compared with the stirring changes recorded during the past two months. All plumbing lines figure in inquiry, and this presages well for the trade later on.

ENAMELWARE— In active demand. Enamelware manufacturers are busy getting up a big stock for the rush season. All grades are asked for, though the higher classes of bath stock are increasing in sales, especially in cases where reconstruction is going on. Prices are firm. Sinks are still excellent sellers.

SOIL PIPE—The price is firm, though no change has yet taken place in the market quotation from 70 per cent. Supplies, while fairly plentiful are none too much so, especially as demand is now approaching the high notch. The season is opening up well.

BOILERS AND RADIATORS — The slight decline noted two weeks age still rules and 60 and 2½ per cent. continue to be the market quotation for steam radiators. Wall radiators are at 50, 10 and 10, and specials are 40 per cent. Hot water radiators and boilers are yet 60 per cent. Booking is satisfactory; but delivery is slow as yet, most of the

orders received being for futures. Present city trade is good.

IRON PIPE AND FITTINGS—The low quotations ruling the Ontario markets have induced free purchases and supply houses report very good sales. Both black and galvanized pipe are in demand, with black possibly in the lead. Malleable and cast iron fittings are active. Prices unchanged from last issue.

BRASS GOODS—While hardly ever in the demand as are other plumbing lines, brass goods are yet increasing in sales from week to week. There seems to be a readier call for the better grade of goods, and this has set in motion somewhat of a revival in brass goods lines.

Solder is firm; lead pipe is in very fair demand; and oakum is unchanged in conditions and price.

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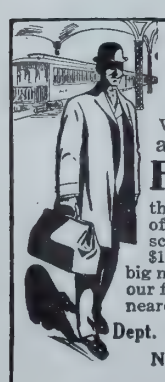

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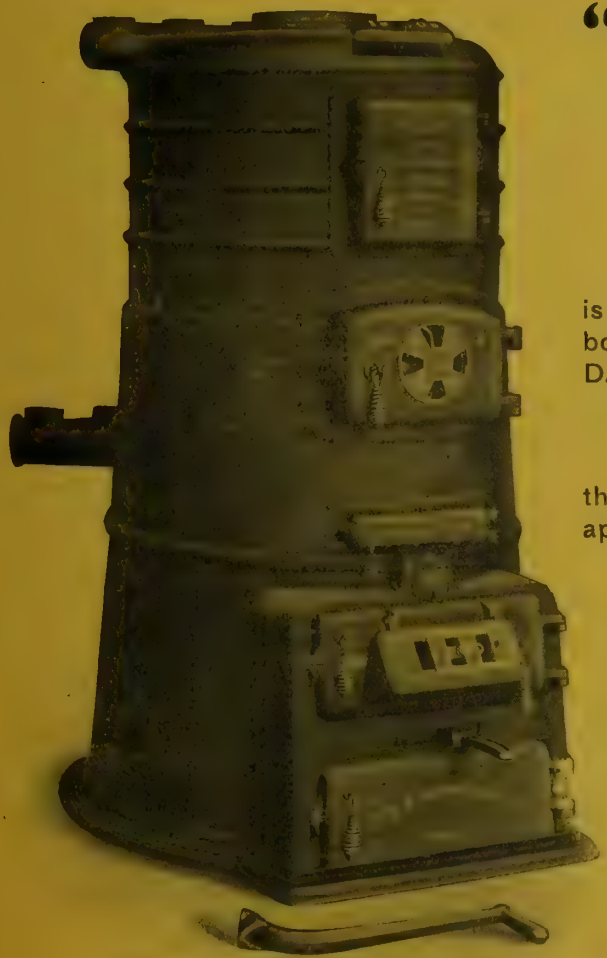

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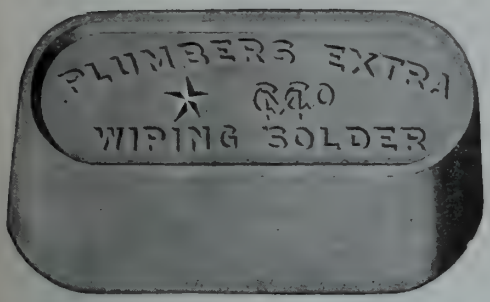

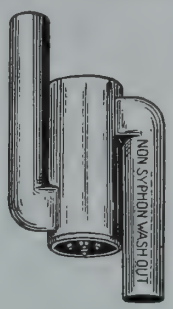

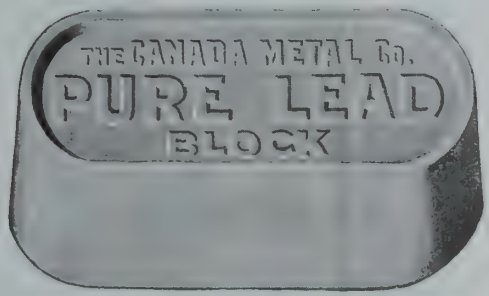

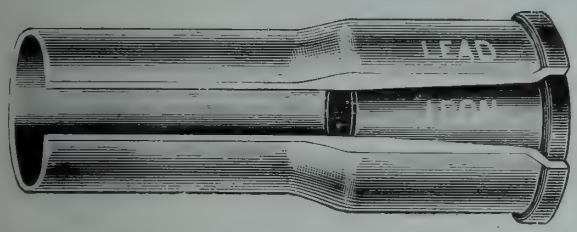

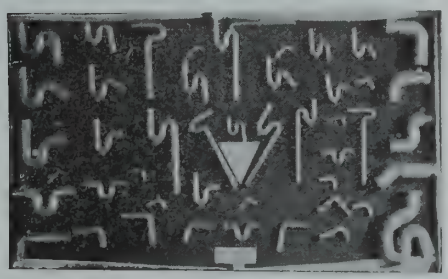

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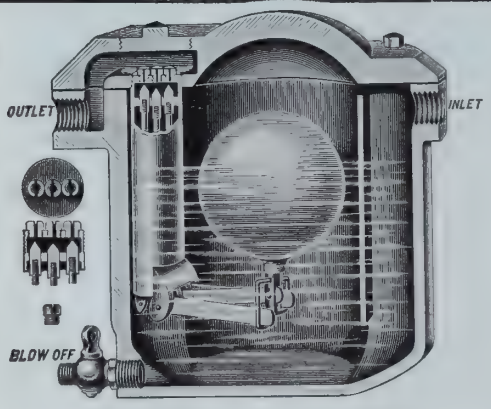

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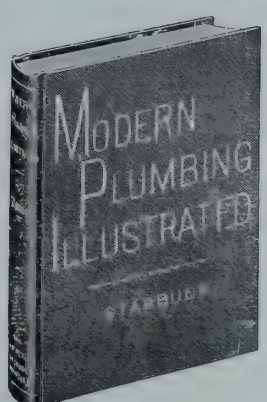

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TORONTO, MAY 15, 1909

HOW PLUMBING MAY BE DOUBLED.

In an editorial in the April 17 issue of Domestic Engineering, John K. Allen raised a question for master plumbers in both United States and Canadian cities to ponder over. He claimed that the amount of plumbing work done can be doubled if the master plumbers bestir themselves and conduct an organized campaign to abolish the disease breeding open privy.

In the Plumber and Steamfitter of April 1 figures were given to show how Winnipeg in 1905 had 6,339 outhouses and in 1909 this number has been reduced to 1,625,, while it is predicted that within a year less than 100 will be found inside the city limits.

The Plumber and Steamfitter urged upon the master plumbers of Toronto, Montreal and other Canadian cities the necessity of following Winnipeg's splendid example. This, however, cannot be done unless the master plumbers have sufficient intelligence and spirit to organize into an association willing to take its place in the front with other organizations working for the public good. And in Toronto at least, it must be admitted that the master plumbers have refused to be awakened from their slumbers.

Mr. Allen does not refer in his article to the good work done in Winnipeg, but he does well in bringing to the attention of the master plumbers of America their duty in this matter of public sanitation. He says:

"If I should come to the local associations of master plumbers, those influential organizations of tradesmen scattered all over the United Sates, and should say that I had a plan by which the amount of plumbing work done in their localities could be doubled, and that this could be done so that the general public would recognize that I had recommended something which would benefit the entire community and not simply be a source of private gain to the plumbing trade, I believe I would be welcomed with opened arms. Yet this is exactly what I propose to do in this editorial, and if it is read carefully and its suggestions followed tactfully, there is no community in the United States in which the suggestion would be carried out in which the number of plumbing installations could not very readily be doubled. The increase which would be given to the plumbing business, manufacturing, wholesale and retail, would be tremendous. Instead of slack work, our journeymen plumbers would be found too few to perform the labor involved; instead of dull business, our contracting plumbers would find themselves swamped with work; instead of the present light demand our wholesalers would find trade so active that their forces of distribution would have to be increased; instead of running factories at low speed, our manufacturers would find such an increased demand for goods that they would be unable to fill orders. This, in the language of our English friends, sounds like "a tall order," but it is nothing that cannot be accomplished in any community, but the contracting plumbers are the people who must bring the desirable plan to fruition. I have indicated that not only can this very excellent condition of affairs be brought about in the plumbing trade, but that the greatest nuisance of modern times can at the same time be eradicated. I refer to the abolition of that virulent nuisance, the privy vault. Chicago has tens of thousands of them; Baltimore has so many that its plumbing inspector is ashamed to estimate the number. Edw. Quinn, Supervisor of Plumbing, St. Louis, hides his face when you ask him how many St. Louis has, and the smaller the city the larger in proportion will be the numbers of this pestilent barbaric method of perpetuating the hateful life of decomposable and odorous organic substances. It goes without saying that no town can do away with the privy vault nuisance until the property so served is supplied with sewer and water supply. This, then, should be the first point of attack, and the master plumbers, through their own and other business organizations which they can influence, should provide for the extension of sewers and water mains to the last possible limit. But the work of abolishing the privy vault need not wait for the creation of public sentiment which will result in the extension of sewers and water systems, as in every city in this country there are hundreds and thousands of privy vaults still in use on property which can be reached by sewer and water connections. These should immediately be abated. It is quite probable that your Health Department will say that it does not now have sufficient authority and backing in the city government to warrant the wholesale abolition of these pestilential spots. In that case it should be the first work of the master plumber to secure the passage of an ordinance which will clothe the Health Department with the necessary authority to order the owners of property on which privy vaults are in use to replace them with sanitary plumbing connected with the city water and sewer systems. Henry B. Davis, the efficient and wide-awake inspector of plumbing in the District of Columbia, can supply copies of a law which is in effect in that district and under which these reforms can be carried out. With the necessary changes to suit local conditions, this regulation should be enacted in the form of an ordinance by every city in America and then the Health Department, backed up by the vigorous

prodding which it should always receive from the local association of master plumbers, would be able to abolish the nuisance of the privy vault and cause the substitution of modern sanitary plumbing. In no other way, so simple and so beneficial to the general public, can the plumbing trade be increased in volumne."

TO BUILD CANADIAN PLANT.

Another United States plumbing supply concern is looking to Canada for an enlarged market and the decision to establish a plant here has practically been made. This time it is the Seamless Steel Manufacturing Co., Detroit, makers of porcelain enameled baths, and Welland is to be their Canadian headquarters unless present plans miscarry. Writing to the Plumber and Steamfitter, E. L. Wayman, general manager, says he is not in a position to give out details regarding the plant at Welland, but will do so as soon as the plans are ready.

There are two pressed steel enameled ware plants at Detroit, the one referred to above and the Pressed Steel Enamelled Ware Company, of which Clarence Booth, formerly of the Booth Copper Company, Toronto, is president. The first mentioned company was shut down for about a year but this spring was re-opened with new capital behind the concern.

A Toronto supply house handling the products of Mr. Booth's company, state that the pressed steel tubs have not had much of a sale in Canada as yet as they are imported goods and the products of Canadian foundries receive preference. Of about 50 pressed steel tubs sold, however, none had been returned so they must have given satisfaction. Their lightness and ability to retain heat are the chief arguments in favor of their use.

Canada's two cast iron enameled ware foundries at Port Hope, Ont., and Amherst, N.S., are being pressed to their fullest capacity to supply the demands of customers and with the growth of the market the new Standard Sanitary Manufacturing Co. will probably find a place for itself. Their plant will most likely be located at Toronto, although Welland has also been considered. But with three large cast iron foundries making bath tubs, etc., in Canada the stamped steel plant will require to do energetic work in popularizing and creating a market for the output of their Welland factory.

WHAT ABOUT AN ONTARIO CONVENTION?

It is about time something is being done if Canadian master plumbers are to hold a convention this summer. The Plumber and Steamfitter recently suggested that a meeting be held at Windsor during the last week in June, at the same time the U. S. National Association holds its big convention at Detroit.

Undoubtedly the influential Association across the line would lend every assistance in its power in making such a meeting a success as well as in helping to reorganize the trade in Ontario. And an address by David Craig, of Boston, a former Canadian who is an ex-president of the U. S. National Association, would be a big feature at the Canadian meeting.

The suggestion has been considered by the national executive committee of the Canadian Association, as well as by George Cooper, Toronto, National vice-president for Ontario, but nothing has been done so far.

Something should be done and at once and whatever is done ought to have as its central object the reorganization of the master plumbers and steamfitters of Ontario. Having a good time should be incidental to the business in hand.

On the correspondence page of this issue Vice-President Dexter, of Nova Scotia, tells of the good work being done in that province and intimates that if the master plumbers in other provinces do not take more interest in organization work the Nova Scotians will have to play in their own back yard. Surely the master plumbers of Ontario ought to have as much enterprise and trade spirit as their eastern brethren.

In order to assist the officials upon whom responsibility rests for calling a meeting at Windsor on June 22 to 25, The Plumber and Steamfitter would like Ontario plumbers to send us answers to these questions :

Do you favor the re-organization of the Master Plumbers Association of Ontario, the central object to be the raising of the standard of work done in the smaller towns gnd cities throughout the province and the securing of provincial legislation with this end in view ?

Will you attend a meeting of master plumbers at Windsor if a call is issued for such a meeting ?

If only a dozen or twenty answer these questions in the affirmative Vice-President Cooper will have something to work upon and announcement of the meeting can probably be made in the next issue of the Plumber and Steamfitter.

FACTS ABOUT PRIVY VAULTS.

A privy vault fifty feet or less from a well, is dangerous.

It may be dangerous at five hundred feet. All depends on the soil and the direction of the flow.

A sandy soil is the least dangerous; a seamy rock soil the most.

It cannot be said that any soil within one thousand feet, say, of a privy vault will protect a well. A sandy soil may, a rock soil will not.

The connection between a privy vault and a well may be slow, but once established it is exceedingly sure.

A well pump may be in higher ground than the privy and still be contaminated; all depends upon the relative position of the privy vault and the point where the water enters the well.

The privy vault should go. It has caused the deaths of countless thousands. There is little excuse for its existence in the country; there is none in the city that has a sewerage system.

Offal buried is out of sight, but not out of danger, not so long as the people obtain their water supply from the ground.

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Manufacture of Enamelled Cast Ironware

The First of a Series of Articles by Dillon Underhill in the Foundry, Describing the Evolution in the Making of Sanitary Ware During the Past 30 or 40 Years.

The commercial manufacture of so-called porcelain, enameled cast iron ware is of comparatively recent origin. Not more than 30 or 40 years have

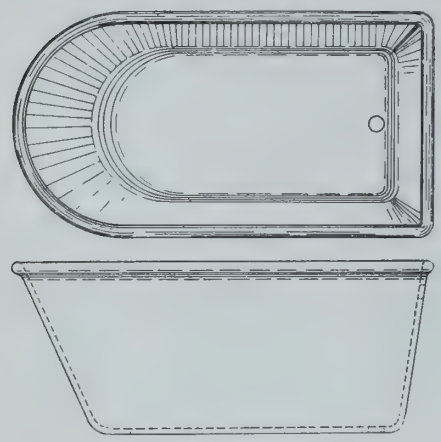


Fig. 1—Early Types of Tubs.

elapsed since bath tubs, lavatories, sinks, closets and other goods of this class have come into use. Many can recall the village hotel—and there are other public houses yet similarly equipped—where a marble or slate slab contained an elliptical opening, and concentric to this opening and fastened to the slab was a cheap china bowl. This was not dignified as a lavatory but was known as a wash basin or wash bowl. For many years the wash tub served the entire family for bathing purposes until the zinc lined tub came into favor. The unsightly color of this metal, however, as it became oxidized, was repellent, and much difficulty was experienced in keeping it clean. Tin plate was not much of an improvement, as frequently an inferior grade was used, the tin peeled or chipped off, and exposed the iron or steel, which soon rusted and became unsightly. The porcelain tub marked the next forward stride in bath tub manufacture, and

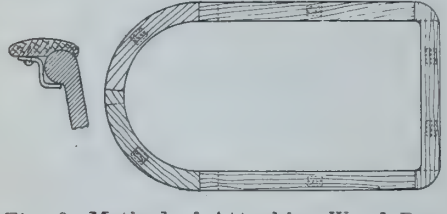


Fig. 2—Method of Attaching Wood Rim.

its comparatively low cost as well as its desirability from a sanitary standpoint soon resulted in creating a heavy demand. The enameled cast iron tub followed closely on the heels of that made entirely of china clay.

Enameling.

Cast, wrought and malleable iron, as well as sheet steel, have been tinned so long and the process is so simple that it no longer excites comment. The discovery, however, that oxide of tin would unite with cast iron made the manufacture of enameled, cast iron ware possible. The combination of these two products alone does not produce the coat of enamel on cast iron. To the oxide must be added many other ingredients, and this particular phase of the work will be touched upon more in detail in a subsequent article. The exact mixture of the enamel itself is a state secret with each individual concern and the compounder of the enameling mixture is either a heavy stockholder, a member of the firm or is sworn to secrecy before he engages in this part of the work.

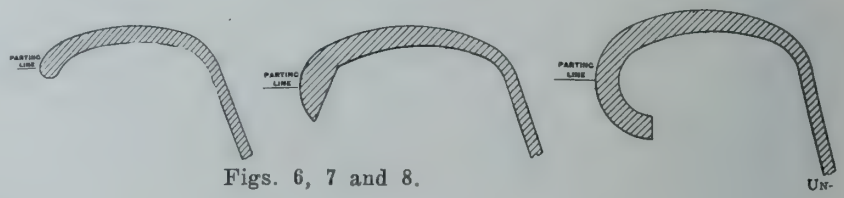
Production.

The production of cast iron, enameled sanitary ware is constantly growing from year to year. In 1907 it can safely be estimated that no less than 500,000 bath tubs were manufactured and installed. This estimate is based on the writer's knowledge of the output of three of the largest plants in the United States, which averaged more than 1,000 tubs per day for practically the entire year. The output last year naturally fell below these figures when the tonnage in all iron and steel lines showed a marked decline. This estimate allows 700 tubs daily for the other plants in the United States, and to those conversant with this line of manufacture the estimate will undoubtedly seem conservative. Furthermore, the production of lavatories, and sinks greatly exceeded that of bath tubs, and when this output is considered the magnitude of the industry can be appreciated.

Profits and Development.

That the profits from the business are large is indicated by the fact that no less than six of the manufacturers place the value of their worldly possessions at seven figures. There are so many difficulties, however, associated with the manufacture of this ware that failure has been the fate of many who lacked the necessary experience and knowledge of the various processes involved, or were handicapped on account of insufficient financial resources. It has been roughly estimated that to erect a plant to compete successfully at the present time would require an expenditure of at least $500,000. To a large extent the development of this industry has been limited to the gradual growth of each individual plant, and the various processes which are now successfully used have been perfected only after many expensive experiments which were charged to the experience account. Very little research work has been done on strictly scientific lines, and until a very recent date the doors of these plants have been kept tightly closed to any who might carry the processes of one manufacturer to a competitor.

Figs. 3, 4 and 5.



Figs. 6, 7 and 8.

At one time a chemist was called in consultation by one of the leading sanitary ware producers to aid in solv-

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ing some of the difficulties encountered but he was so handicapped with the lack of information of the processes in-

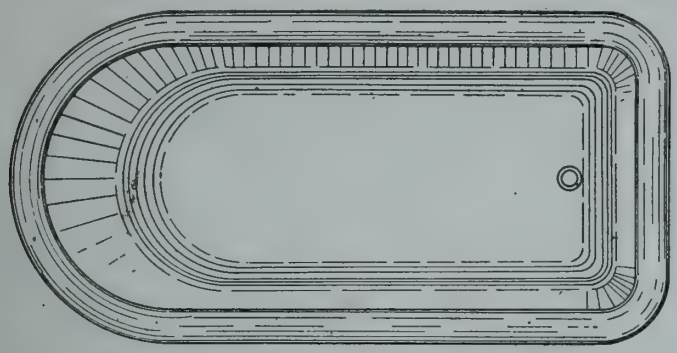


Fig. 9—Modern 3-inch Roll Rim 5½ Foot Tub.

volved that he was unable to carry on the investigation satisfactorily. He appealed to the owners of the plant in vain, and they finally decided that rather than divulge their processes they would seek a remedy for their difficulties by costly experiments, and the chemist, although he ranked high in his profession, was informed that he would not be permitted to proceed with the work. This incident involved the enameling process only, but the same spirit of conservatism holds sway in all other departments, and even to-day, in the majority of foundries of this class, we do not find a competent chemist in charge. In some of these plants the loss from defective castings is very heavy, and this could almost entirely be eliminated if a competent man were employed to oversee the mixing of the iron and the melting operations.

Secretive Policy.

Despite the vigilance on the part of the manufacturers many have mastered this business and in some cases the heads of various departments have combined their knowledge and have succeeded in interesting capital and are now operating large plants. Therefore, it is a question whether this secretive policy is advisable. One interest has practically thrown open its shop as wide to visitors as manufacturers in other lines.

While the owners of these large establishments do all in their power to withhold information regarding their methods from their competitors, they do not hesitate to adopt the latest practice developed by others. When the bath tub was first placed on the market it was molded entirely by hand, but after considerable experimenting, one concern succeeded in developing a molding machine for this work. This information soon reached the ears of a powerful competitor, who was anxious to know how the machine was built and operated. To seek admission to this foundry for the purpose of viewing the machine would certainly have met with a positive refusal. The managers of both concerns were, however, on friendly terms, and while the one operating the molding machine was away from the shop the other gained admittance to the plant and secured all of the necessary information which enabled him to build a similar machine. On another occasion a machine was designed by one concern for molding small ware. A competitor heard of this and by some means he contrived to see the machine, and after securing the necessary sketches built one on similar lines and had it in operation in his plant in a short time. The foregoing is merely related to show to what extent the manufacturers of sanitary ware have endeavored to surround their manufacturing operations with an air of mystery, but despite their vigilance many of their secrets are generally known in the trade.

Production of Bath Tubs.

Inasmuch as the manufacture of bath tubs is the most difficult operation connected with the production of sanitary ware, this process will first be described. The method of making tubs by hand in the foundry will be discussed, as well as the various methods of making the patterns. The work of the various departments will also be dwelt upon, and finally we will describe the highest state of the development of this process which has resulted in the production of the molding machine-made bath tub. The manufacture of small ware including lavatories, closets, sinks, integral and ordinary kitchen sinks, will be treated in succeeding articles, and other details of great value to those engaged in this line of business will be thoroughly discussed.

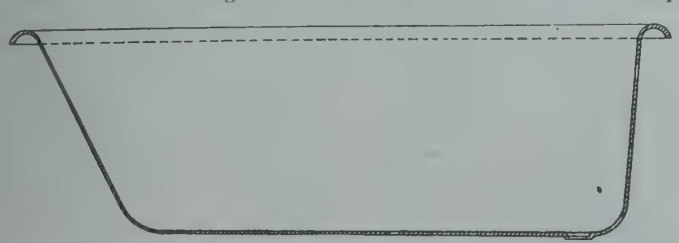


Fig. 10—Improved Rim Design of Modern Tub.

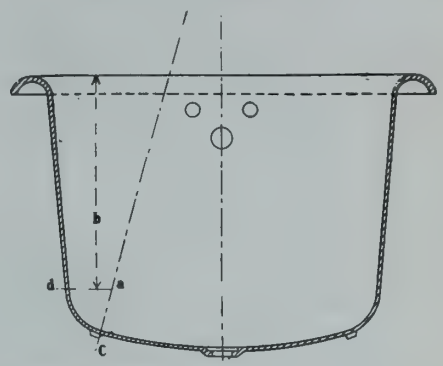


Fig. 11—Foot End of Modern Tub.

First Cast Iron Tub.

One of the first bath tubs manufactured and which was considered a creditable piece of work at the time it was placed on the market is shown in Fig. 1. Artists claim that there is no beauty in straight lines, and it is evident that the original designer of this tub was not burdened with an artistic temperament. The designers were patternmakers who desired to secure a substantial pattern made of wood that would not easily be broken by the molder when rapping it in the sand. However, the pattern was easily repaired, if split, inasmuch as it consisted largely of straight boards glued together with small curved pieces added. The molder likewise desired plenty of draft, the more the better. The works manager was also of this opinion, and to reduce the foundry loss he thought it necessary to make the tub about

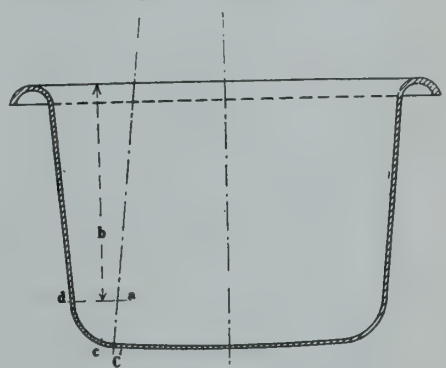


Fig. 12—Head End of Modern Tub.

¾-inch thick on account of the large surface exposed, which he believed would chill the iron if made of thinner section.

In this way the first tub was designed and this model had practically no rim. Provision was therefore made for placing a wood rim around the edge, which was fastened with a clamp similar to a planer clamp. The bottom was practically flat, and the plumber was relied on to give the tub the proper drainage. Sometimes this amounted to ¼-inch in its entire length, but more frequently the tub was not inclined. The curve of the tub at the head was an arc of a circle that was the easiest for the patternmaker to draw. No draftsman was called into consultation, as the proprietor passed upon his ware by appearance. The idea that the head-end curve should conform to the back when the bather reclines in the tub would have been considered so utopian as to invoke ridicule. This tub, it will be noted, is shorter and deeper for its length than tubs in use to-day. All curves that connect the sides to the bottom are very shallow; the bottom is quite flat, while the thickness of the metal varies from ¾ to ⅝-inch. Even this small tub weighed approximately 300 pounds. A heavy head was placed around the tub for a rim, which was usually covered with a wood rim, as shown in Fig. 2. However, many tubs were installed in bath rooms and were boarded up on all sides. In the exterior appearance of the tub can be found the reason for this, inasmuch as it very much resembled the surface of sash weights.

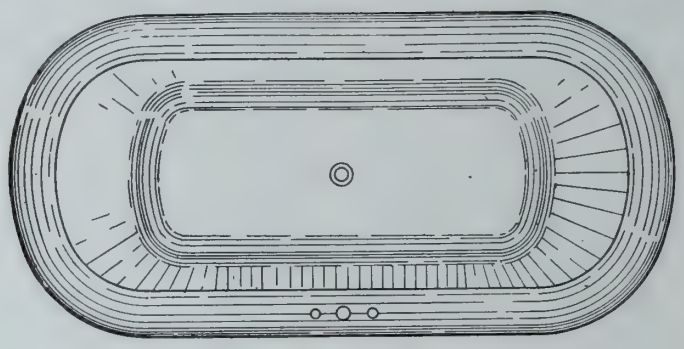


Fig. 13—Modern High Grade Bath Tub.

Wood and Cast Iron Rims.

The wood rim was frequently made in five sections so that the grain would be nearly parallel with the rim to prevent splitting and was glued together with a long lap at the end of each section. It was usually made about 3 inches wide and ½-inch or more thick depending on the curved or flat top desired. Two screws and Z-shaped, flat plates were usually fastened in a half dozen places to hold the rim rigidly in place. A groove was usually cut on the under side of the wood rim and the Z-plate pressing up and against the side of the rim made a very satisfactory and inexpensive fastening. The steam in the bath room together with the water soon played havoc with the glued joints and the rim soon fell to pieces. It was, therefore, necessary for the manufacturer to devise a rim that would give satisfaction.

The bulb-shaped rim was discarded and the roll rim, similar to the one shown in Fig. 3, but which at first was made much thicker to correspond with the thickness of the tub, was adopted. This rim is still used on many of the cheaper tubs, as it is easily molded on account of the small amount of sand that must be held up directly over the rim.

Molding Tubs.

Bath tubs are always molded upside down and the parting line is indicated in the sectional views of the rims, Fig. 3 to 8. It will be noted that the parting is made on the edge of the rim in Figs. 3, 4 and 5. This leaves the edge of the rim smooth and when the tub is poured from the top, as is frequently done, a very small fin is formed when good flasks are used. In an ordinary casting this fin is of very little moment, as it is easily knocked off, or can be chipped off with a chisel. With enameled iron ware all fins must be removed as the rim and tub are closely inspected by both dealer and customer, and as every defect is magnified by applying the enamel, the tub would have to be condemned entirely or graded as a second, thus eliminating all profit. Where any defects occur which project outward, they must be ground off. For this reason tubs made with rims having partings, such as are shown in Figs. 6, 7 and 8, result in heavier losses in the foundry, and are considered of a higher grade. Furthermore, if the drag and cope do not close properly, a sharp corner is formed around the rims of the last three styles mentioned, and the tub is ruined. On the other hand, if a mismatch occurs with the first three styles of rims, making it thicker on one side than on the other, it does not materially affect the tub, provided the sides have not been cast too thin to prevent cracking when placed in the enameling oven.

Under Roll Rim.

The under roll rim makes the better appearance, and while it costs more to manufacture, it is in heavy demand. Fig. 8 shows the rim of a tub made with a dry sand core hung in the cope, the cores being made in sections and considerable difficulty is experienced in setting them in place. The solution of the under roll rim, made in green sand entirely, is shown in Fig. 7. The under roll rim shown in Fig. 8 was adopted to compete with porcelain ware, as it is desirable for enameled cast iron ware to lose its identity and to assume an artistic form as much as possible. The extreme cost will militate against the production of individual patterns of enameled bath tubs, owing to the expense of the patterns. This, however, is occasionally done for large hotels when competing against manufacturers of porcelain tubs to decrease the sale of these as much as possible, even though little or no profit is made on the order.

A compromise between the ordinary roll rim and the under roll is shown in Fig. 6, and is cheaper to manufacture than the latter. The rims illustrated vary from the cheapest to the most expensive, and the prices of the tubs are in proportion. The rims shown in Figs. 1 and 5 are very popular and it can safely be stated that more 3-inch rim tubs have been sold up to the present time than any other style.

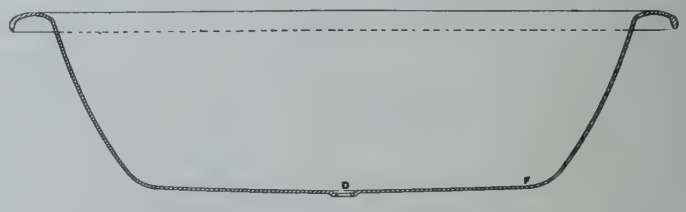


Fig. 14—Sectional View of Modern Tub.

Thickness of Rim.

By referring to Figs. 2 to 8, it will be seen that the thickness of the metal greatly increases as the rim leaves the body of the tub. Tubs having 2 and

2½-inch rims are usually made ¼-inch thick and the rim gradually increases to 5-16 inch at the edge. The 3-inch rims increase from ¼ to 7-32-inch, and the 4½-inch rims from ¼ to ⅜-inch or more. The rims are increased in thickness so that the tubs will hold their form better, inasmuch as they are annealed practically a half dozen times in the process of putting on enamel, to say nothing of extra annealing which some manufacturers do independent of the enameling operation. The rim being thicker heats more slowly than the body of the tub, and the enamel melts on the tub at a uniform rate. When it is taken out of the enameling oven the rim cools off slower than the body, so that more time is allowed for placing the enamel on the rim. It is essential for the rim to be as nearly perfect as possible, but a pin hole or dark spot on the side of the tub is easily overlooked.

High Grade Tub.

The design of an ordinary 3-inch roll rim, 5-foot tub is shown in Figs. 9, 10, 11 and 12. By comparing these with Fig. 1 it can be clearly seen that this tub has been built on more artistic lines. It is not nearly so short, having been lengthened to five feet, while the head, still an arc of a circle, has a wide rim which throws it in relief. The foot of the tub is also beautifully curved and gracefully unites with the sides forming a harmonious design. Fig. 10 also shows the improvement of the roll rim as compared with the heavy section of metal in Fig. 1. The bottom is joined to the sides with generous curves at both ends, and instead of being parallel with the plane of the rim, it slopes to the outlet at the foot of the tub. The metal in the tub shown in Fig. 10 is only about one-third as thick as that shown in Fig. 1, and the bottom is provided with a recessed outlet so that a fitting can be placed flush with the edge making a neat connection. A section of the foot end of the tub is shown in Fig. 11, and a section through the head in Fig. 12. Instead of being flat, both bottom sections are curved, the curve at the foot being on about a 3-foot radius, while at the head at a radius of about 11 feet. This gives a fall of about 1 inch below a line drawn horizontally across the inside of the tub from the point C, Fig. 11, and C, Fig. 12. From the head of the tub to the foot there is a fall of ¾-inch. This insures thorough drainage when the tub is set level with the top of the rim.

The Feet.

The most important feature accomplished is the leveling of the top of the tub by using only one pattern for the feet or legs. Although the bottom has a constantly varying height for drainage the same foot may be used on any one of the four corners. This is accomplished by making the distance b, shown in Figs. 11 and 12, equidistant from the top of the rim to a centre for swinging in an arc which forms the curves adjoining the bottom and sides. The radius of this arc must be exactly the same all along the side between the two sections shown. This arc will join the bottom curve at C and C' and at varying points between these two sections. It will be seen that C' is nearer to the bottom of the head section, Fig. 12, than C, Fig. 11, which is due to the curve being somewhat flatter and having a larger radius at the head than at the foot. We therefore have for our common fitting surface the distance from d to C, but not from d to C', since if the foot should be made to fit beyond C it would not clear from c to C'. If this idea is carried further a series of tubs can be built to incorporate this one corner curve, and thus have one universal foot for all of the tubs made by one concern.

Late Design.

Plan and cross section of the highest grade tubs made to-day, which resemble those made by several large concerns, are shown in Figs. 13 and 14. The handsome appearance of these tubs cannot be clearly shown in line drawings, as there are three, compound curved surfaces joined in several cases. It will be noted that the outlet is placed in the centre of the tub, and the drainage must be directed to this point. A section taken at D, Fig. 14, would be practically the same as that shown in Fig. 11, except that it would not have so much fall, since the distance from D to F would be only half that of a tub of equal length. A section taken at F would be almost identical with that shown in Fig. 12. The same principle of corner curves can also be carried out if duplicate feet are desired. Some concerns, however, set the feet to stand exactly on the corners, that is, so that the foot laps around both the ends and the sides, and they, therefore, make two separate feet, two of which will fit the diagonal corners. The feet are usually made large to correspond with the rim and to preserve a certain balance of the design as a whole. An under roll rim is used and is made without dry sand cores and corresponds to the one shown in Fig. 7.

Graceful lines are obtained by the use of a double radius of three centers for the end curves as shown in Fig. 13. The ends are somewhat flat owing to the large radius used for the middle of the curve, and when joined to the large corner curve makes a pleasing effect. A double curve is also used at the ends as shown in Fig. 14, and when these surfaces are properly joined, the present ideal in bath tub construction is reached.

(To be continued).

PIPING CALIFORNIA ORCHARDS.

Spraying trees from a pipe line is a new thing in California, but is now being done in one or two places and the scheme is so practical that it is very likely that it will be generally adopted and no small amount of pipe will likely find a market for this purpose. At the present time orchards in California are sprayed by means of a tank and force pump mounted on a wagon. In some places where the ground is boggy at this season of the year this operation is accomplished only with great difficulty and at times a loss of fruit results from this forced neglect. To obviate all this the inventor of the scheme planted pipes between the rows of trees on his orchard. These pipes run lengthwise through the orchard and are tapped by stand-pipes every fourteen trees. To these stand-pipes hose can be attached and one man can spray fourteen trees in each direction, or 196 trees in all without changing the hose. The spraying solution is mixed at a central point and forced through the pipes by a gasolene engine. After the spraying is done the pipes are cleaned by forcing a stream of clear water through them. The saving in help, which amounts to more than one-half, will soon pay for the installation of the plant.

PROTECT THE CHILDREN.

In plumbing and heating in public schools it is criminal to use poor material and careless labor. Adults are, in a degree, able to protect themselves from such faulty construction, but the child is helpless. He must drink the water, breathe the air and dispose of his bodily wastes in the ways we provide for him. And for the children we should never provide less than the best —good goods, bearing the maker's name and guarantee, and conscientious, skilled labor.—Domestic Engineering.

HE HAD SEEN THEM.

Summer Visitor—Did you ever see a water spout, Captain Oldsalt?

Capt. O.—Aye, mum, that I have, dozens of 'em.

S. V.—Really, how remarkable! Where did you see them, if I may ask?

Capt. O.—At the plumber's, mum, at the plumber's.

Objections to Enamelled Iron Closets

Answers to Questions as to Their Utility and a Study of the Process of Manufacture Makes Their Use Questionable.

(By J. F. Brady, Washington, D. C.)

By the scarcity of requests from owners in this city for special permission to use enamel iron water closets, one would think the fixture was not a popular one, and one which would afford the manufacturer too little profit for its continued supply to the market. Yet it is a fixture which is still finding favor in some cities but one which is rapidly being prohibited from use in a greater majority. For instance in Washington, D.C., it is not prohibited by regulation but by moral suasion. In New York City, porcelain is required and in Cleveland, Ohio, while the old plumbing ordinance allowed the use of this fixture, the new code which has recently been adopted has wisely included provision for its prohibition. The code in a number of cities does not mention this type of closet and it is either allowed or not allowed under a ruling of the particular office.

The writer is informed that recently a request was made to the local plumbing department for permission to use the enamel iron water closet in each of two bath rooms of five houses, which were being constructed in a first class neighborhood and by quite a well to do real estate investor.

We can readily agree with the Chief of the Plumbing Office, Henry B. Davis, for refusing to allow the waiving of the regulations which state that a closet of "suitable" type be used, and the ruling of the Washington office is that an enamel iron water closet is not a suitable type of closet to be installed in bath rooms. If a precedent is once established it is certainly harder to get back to the former ruling than it is to refuse to deviate therefrom in the first instance.

The persistency of the applicant in this particular case, and the fact that he asserted the enamel iron water closet was permitted in the larger cities, prompted our chief here to investigate the merits of the fixtures further than the experiences of this city. In consequence of his desire to learn from the chiefs of other cities he informs me he wrote to Chicago, Illinois; St. Louis, Mo.; Philadelphia, and Pittsburg, Pennsylvania; Baltimore, Maryland; New York City, and Rochester, New York, and Cleveland, Ohio, and that from the eight letters sent out five replies were received, the three not answering being New York City, Philadelphia and Pittsburg.

There is little doubt but that the information gained on this subject will prove interesting to the readers and I give the substance herewith.

Inquiring into the conditions existing in the cities enumerated above, Mr. Davis asked:

"Dear sir:—I have received a number of requests to permit the installation of enamel iron water closets, and I desire to be informed whether you have raised any question against the installation of water closets of this material in bath rooms:—

If not, have they proved satisfactory?

If you are prohibiting them, what are your reasons?

Kindly let me have this information as soon as possible, and accept my thanks in advance for your kindness.

HENRY B. DAVIS,
Chief Inspector of Plumbing.
Washington, D. C.

While I have seen the original letters, for obvious reasons it is deemed best to omit the names of the writers of the following replies.

Extracts from Letters.

Supporting the theory of the prohibition of the use of this type of fixture, these quoted portions of the replies are terse and to the point:

"**** our present ordinance do not prohibit the use of them, but the new ordinance **** will prohibit the use of said closets ****"

"**** In our police stations we have installed enameled iron syphon action water closets and a few of such water closets have been installed in some of our factories ****"

"**** that there are a few enameled iron water closets installed in some of our factories and basements of public buildings, these closets being installed with the idea that they will stand the hard usage as often experienced in public toilet rooms. The plumbers condemn them, claiming it is impossible to keep them clean. I do not advocate their use. ****"

"**** It is my opinion that the requirement in New York City that every water closet within a building should be of porcelain, is fully justified, as I do not think that even the present process of coating cast iron is by any means satisfactory when it is used as a container of foecal matter, and urine. While it is possible there may be examples of such closets which have for a long time been in fairly good condition, I am quite of the opinion that the surface of enameled iron is very much inferior to a proper porcelain surface, and that, therefore, such closets should not be allowed to be used inside of any building. ****"

"I have on numerous occasions raised the question of enamelled iron water closets to be used in bath rooms and other places. My reasons are these: In the course of time the urine and excreta form a thick coating around the inside of the closet bowl and therefore there is a nauseating smell that arises, and I have known them in this city where they have been in use from say 5 to 7 years at the longest, that the enamel is entirely eaten off from the inside, leaving nothing but a cast iron bowl. It is only recently that I have taken up this matter and investigated the same in one of our central district police stations, where they had put in a short hopper and trap combined in the cells, and I was informed that in order to keep these closets clean they had to be scrubbed every morning. I will venture to say that in our city you could almost count on the fingers of one hand, the number of enamelled iron closet bowls in use, for they are not only unsanitary, but after having been in use for a short while are unsightly, as persons rubbing against the outside or striking vessels against them naturally chip off the enamel. I took up these questions with the supply houses a number of years ago and I have been assured that the demand for these closets has been greatly lessened."

All these you can see, point to the fact that the use of this closet is not generally advocated for the reasons stated in the above quoted portions, as well as in Mr. Davis' reply to the applicant for the permission to use them in Washington, which follows:

Mr. Davis Reply.

"Upon receipt of your letter of request to use Standard Manufacturing syphon jet water closet in premises, I sent out a circular letter to the inspectors of plumbing of a number of cities and received replies from Chicago, St. Louis, Baltimore, Rochester and Cleveland; I also sent a letter to the Standard Manufacturing Company, asking how the enameling was done.

I did this, not only to be fair with you, the Standard Manufacturing Company, but also to myself, since I object to the use of this type of material for water closets, not only in your premises, but in all dwellings, and I did not wish to be unreasonable—as I know you feel was the case when I spoke so strong against the use of enamelled iron water closets.

"I have seen iron basins enamelled at factories, and I know how difficult it is to handle a red-hot piece of iron to enamel it.

"The process is to heat the fixture to a cherry red heat and remove it from the furnace with iron holders about 10 or 12 feet long and sift over the fixture the enamel powder, which melts and forms a liquid white glass surface, when

the powdered fixture is again placed in the oven. This powder liquifies in thick paste under heat, and to show that it would run and form rough, sharp projections, which in the case of a closet catches paper, etc., look at the lower edge of the rim of almost any bath tub, and you will find the enamel cut off and the black iron visible in places under a thin film of enamel which is due to the cutting off of the dripping enamel, when fixture is removed from the oven.

"Now when the enamelling of a water closet is taken into consideration, it is impossible to sift the dry powder into the syphon jet or syphon leg of the red hot iron closet and the only method by which this can be done is while the fixture is cold to plunge it into an enamel bath, drain thoroughly dry and place into the oven to melt the dried liquid into a glaze.

"I quote you a portion of the letter received from the Standard Manufacturing Company, in reply to mine asking how this enamelling was done:—

" * * * the manner in which we enamel legs of syphon closets is that the first coat is in a liquid state and the leg of the closets is filled entirely with the liquid enamel, and then the excess is poured out. This after drying it placed in a muffle heated up to a matter of 1,400 to 1,600 degrees of heat, and the enamel powder is put in the leg of the hopper until it is entirely full and allowed to remain for a short space of time. The heat of the casting is sufficient to make a certain portion of it plastic which adheres to the casting. The closet is then gyrated until the loose enamel is expelled, then the casting is put back into the muffle, bringing it up to a bright red heat again which fuses to a smooth finish all the enamel that is on either the inside or outside of the article * * *"

"I think you can well see that it is almost impossible by this process to prevent the liquid enamel stringing in places, or gatherings in small openings like the syphon jet of a water closet, or closing it entirely, as it is impossible to manipulate a red hot water closet fixture like an earthenware bowl, to remove the surplus enamel. Again a syphon jet earthenware or vitreous china water closet bowl is usually made up in 15 separate and distinct moulds, by as many different workmen. After thoroughly dry the various perfected parts are assembled into the water closet complete. Not so with cast iron. It must be cast in a sand core mould in one piece, and not unfrequently the hot metal breaks down this sand core or causes rough projections in such syphon jet bowls, where it is impossible to see or even feel, which together with the difficulty of enamelling the syphon leg and water jet, and the liability of breaking the enamel, and if broken rust eats its way under the rest of the enamel and causes it to flake, are sufficient reasons in my opinion why an enamelled iron syphon jet water closet should not be permitted within dwellings used for human habitation."

HENRY B. DAVIS,
Chief Inspector of Plumbing.
Washington, April 22.

In the case of the enamel iron tank many times it is found the enamelling flakes, causing rust to form and eat away under the enamel, causing it to scale and is sometimes responsible for obstructions; a remedy for this however could be suggested by the placing of a copper lining for the tank. But in some localities even copper will not stand on account of the chemical action of the various waters. A better tank to overcome these difficulties is the vitreous ware, which is enamelled inside and outside, presents a fine appearance, and if properly secured to the wall forms a lasting tank which chemicals in the water do not affect.

SANITARY COMMITTEE'S REPORT.

David Craig, Boston, chairman of the Sanitary Committee of the U. S. National Association of Master Plumbers, announces that the report of the 1908 sanitary committee has been published, as directed by the National Board of Directors, and will be furnished at 50 cents a copy, upon application to the national secretary's office 155 Mason St., Milwaukee, Wis.

CALL TO DETROIT CONVENTION.

President W. H. Halsey, of the National Association of Master Plumbers, has issued the formal call to the twenty-seventh annual convention of that organization at Detroit, Mich., June 22, 23 and 24. The Pontchartrain has been selected as headquarters for the convention. Mr. Halsey adds that as "several other conventions will be held in Detroit the same week as ours and the hotels will be crowded, it is very important that delegates secure accommodations at once by writing to the hotels. C. P. Tietze, 1558 Mack Ave., Detroit, is chairman of the hotel committee, and will be pleased to assist delegates."

MILLIONAIRE RADIATOR MANUFACTURER.

Busy Man's Magazine (Toronto) for May published the following sketch of M. J. O'Brien, Renfrew, a widely known Canadian millionaire, who was recently chosen a director of the King Radiator Company, Toronto:

"M. J. O'Brien, millionaire, resident of Renfrew, Ont., who recently built a magnificent theatre to foster the cultivation of art, literature and music among fellow citizens with whom he has mingled for the last quarter of a century, has had a somewhat spectacular career.

"A Nova Scotian by birth, he obtained his first job with pick and shovel on the Intercolonial Railway. He owes much of his success in life, not only to natural shrewdness and strong willpower, but to a genial personality, which always gave him a hold on his comrades, and later on the men under him, until he has become one of the foremost railway contractors in Canada. To-day, in company with others, he has an interest in $15,000,000 worth of contracts on the Transcontinental Railway, 371 miles of it in Quebec.

"He was one of the first commissioners for the building of Ontario's provincial railway—the Temiskaming and Northern Ontario line. He soon was thoroughly acquainted with the possibilities and rich resources of the unrivalled Cobalt district. Mr. O'Brien has always been open for a speculation and, one day when a Toronto lawyer, J. B. O'Brian, approached and offered him an investment in the now famous O'Brien mine, he was not long in accepting, becoming four-fifths owner of the property. He is largely interested in other mining propositions in the Cobalt Lake district, Gow Ganda, Sudbury, Nova Scotia, Renfrew and Hastings county, and the Gatineau Valley. Down in Mexico he has copper mines which he believes are greater wealth producers than any property that he owns. He is also identified extensively with lumbering and manufacturing industries."

M. J. O'BRIEN,
Prominent as railroad contractor, mine operator and radiator manufacturer.

Advertising the Plumbing and Heating Business

Address by A. P. Elder, Ottawa, Kansas, before the recent Convention of the Kansas State Master Plumbers' Association.

The present age reveals thousands of colossal fortunes built up by modern advertising methods. One has but to read the magazines and newspapers to see that the successful business man, plumber or steam fitter must know and believe in advertising. Persistent, pungent, pointed presentation of what you have to sell will bring phenomenal results. Tradesmen who are restricted in territory to a county cannot use papers having a national circulation at a cost of $4,000 per issue, but they can present in local papers neat catchy head lines with attractive cuts of specialties and tersely state their merits and their own claims for the patronage of the readers, at a moderate cost that will surely bring an increase of business.

Plumbers were slow to recognize this fact, but the efforts of manufacturers

A MODERN HOME
With Hot and Cold Water.
is easily supplied in town or country.
It makes the home healthful and attractive.
A house so equipped rents better and sells better, in fact, it makes life worth living. This is especially true, if your fixtures are sanitary and the work is done in a sanitary manner
Come to our show room and talk it over
This means the ELDER way.
208 Main ELDER'S 114 W 2d
THE SIGN OF SATISFACTION SINCE 1876.
Both Phones 37

who have nationalized their advertising, have made it possible to get the benefit locally of the efforts that have been made by manufacturing concerns to focus public opinion upon the great importance of meritorious, sanitary plumbing fixtures. All manufacturers will furnish the highest class of electrotypes free of charge, and by careful observations of the successful advertiser's methods and a little special study and training one can soon qualify to reap the rich harvest that is waiting to be gathered through the modern methods of advertising. The essentials are.

1. Articles for sale that have merit.

2. People who possess the means to buy.

3. The articles well displayed.

4. Then invest the articles in the minds of the purchaser with a value separate from the idea of price.

Must have Display Room.

It is useless to start an advertising campaign until you have selected and placed in a neat and attractive show room articles that have merit. The people who possess means to buy are numerous and are only waiting "to be shown." Plumbing fixtures are attractive if kept clean and neat, and are well and properly displayed. We find a lady stenographer and bookkeeper in a plumbing display room will be valuable in performing the usual duties, and in addition will generally keep the fixtures well dusted, and, if coached a little, will often be able to show good ability as a saleslady.

The four essentials above stated cover the whole subject. The first three need no extended discussion. The fourth then, is the one of supreme importance: "To invest the article in the minds of purchasers with a value separate from the idea of price." We are aware that in the present day of catalogue house competition, the price cuts a great figure, and when we do advertise a price on an article it should in reality be a low price, for absolute truth in all statements is necessary to establish confidence in the public mind. An advertisement run a year in a daily or weekly paper without change, that informs the readers that:

> John Smith, Sanitary Plumber, 215 West Fifth street, Kanoplis, Kansas, all work guaranteed.

will bring poor returns, but the same space, changed daily or weekly, with a neat cut and a catchy headline that states specifically what John Smith has to offer or what claim he has upon the public for patronage, will be read and remembered by a large percentage of readers.

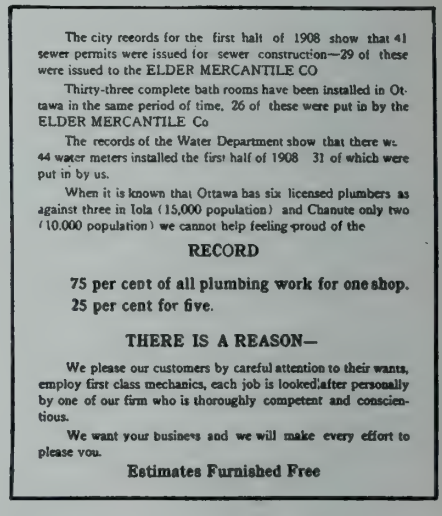
Ordinarily we do not believe in advertising prices but rather in describing an article in a manner to create a desire to own it, but occasionally we run an advertisement offering a 5 ft. 3 in. roll rim bathtub for $15. When our friends in the country then want to test our claim for meeting competition, they turn to their catalogue and find a similar tub is $16 and $18 in Kansas City or Chicago, and immediately we are vindicated in their minds, but, of course, when the customer comes to our display room we show the article exactly as represented but we do not fail to also show a tub with the "green and gold label," upon which an adequate profit is added to the cost price.

Always run an Illustration.

We find it advantageous to run a cut of what to you seems so simple an arrangement that it would seem hardly worth while to assume that everyone was not familiar with it. I refer to a kitchen sink with a pitcher spout pump on a bracket at the end, under the head line "Home Convenience," and it is surprising the country business that this brings, and the great number of people who do not know that water can be brought horizontally a distance. When you have illustrated and impressed a reader that the article shown is what he wants, it is rare that he is then exacting about the price to be paid. He feels an obligation for your calling his attention to something he recognizes as needful, and therefore is not going to spend much time in "shopping."

We have found an advantage in clearly showing the merits of the small articles we use such as bibs, stop and waste, bath faucets and supplies. We show cut and tell clearly and briefly why we think they are meritorious. By doing this we find that often on a competition job where we are a few dollars higher, the work will be awarded to us because we have laid the foundation by informing and proving that we are furnishing meritorious articles, even where they are buried in the ground out of sight but still having an important duty to perform.

What the Record —— Shows ——


The city records for the first half of 1908 show that 41 sewer permits were issued for sewer construction—29 of these were issued to the ELDER MERCANTILE CO
Thirty-three complete bath rooms have been installed in Ottawa in the same period of time. 26 of these were put in by the ELDER MERCANTILE Co
The records of the Water Department show that there were 44 water meters installed the first half of 1908 31 of which were put in by us.
When it is known that Ottawa has six licensed plumbers as against three in Iola (15,000 population) and Chanute only two (10,000 population) we cannot help feeling proud of the
RECORD
75 per cent of all plumbing work for one shop.
25 per cent for five.
THERE IS A REASON—
We please our customers by careful attention to their wants, employ first class mechanics, each job is looked after personally by one of our firm who is thoroughly competent and conscientious.
We want your business and we will make every effort to please you.
Estimates Furnished Free
208 Main St ELDER'S 114 W. Second
THE SIGN OF SATISFACTION SINCE 1876

Good Advertising Brings Results.

Advertising sometimes seems expensive for the results obtained, but we have positively proved in the past year that good advertising does bring results. Our competition in 1908 was simply fierce, and in starting the year we could not see how we could run our plumbing department with $4 a day men against these competitors who believed $1.50 a day was as much as any man was worth and these other shops doing their own work, but the year's results show that by good workmanship, careful effort to please our customers and paying especial attention to finishing and leaving our work in attractive condition, and by modern advertising methods along the lines indicated above, we increased our business materially and by actual records of the city did 75 per cent of the plumbing business with five competitors in a small city of eight thousand. This certainly is a tribute to the power of the press, backed by earnest and intelligent effort.

Different Systems of Heating

Classified by "Phoenix" in Domestic Engineering, According to Pressure and Circulation—Principal Systems Described.

A system in which the water of condensation returns to the boiler by gravity, is called a gravity circulating system. The different parts which make up the "runs" of this system are called mains, branches and risers.

A steam main is a pipe used to carry steam from the boiler to any branch or branches.

A branch is the pipe which carries the steam from the main to the riser; and the riser is the pipe which delivers the steam from the branch to the radiator.

Steam jobs may be classified with regard to their circulation into one pipe systems and two-pipe systems.

The two-pipe system is the older and was used very extensively many years before the one-pipe system came into practice.

In the two-pipe system each radiator is supplied with a separate flow and return pipe and there must be a separate flow and return main to the boiler.

In the one-pipe system the radiator is connected by a single pipe which supplies the steam. and returns the condensation to the riser, branch and main.

These general methods of obtaining a circulation may be divided into many different systems, some of the principal ones in general practice being the following:

1. The two-pipe system with wet returns.
2. The overhead system.
3. The one-pipe system with dry returns.
4. The circuit system.
5. The divided circuit system.

Many Systems Have Merits.

It is neither reasonable nor just to say which of these different systems is best. Practical men know that different buildings require different treatment, and also that a system which would give the most gratifying results in Florida might not pan out well in the Northwest.

I am speaking here with regard to strict gravity jobs and am not considering at this point any of the many patented systems where force of any kind is applied in returning the water to the boiler, as these particular systems are found, more or less plentifully, everywhere.

The best practical men of the day have generally discarded the two-pipe gravity steam system as needlessly expensive and out of date, and most of these systems seen nowadays were put in many years ago.

The overhead system is somewhat of a combination of the one and two-pipe systems and is very convenient in a large building where no pumps or steam traps are to be used and where the cellar is very low. The risers go directly to the attic of the building and branches are taken off at the necessary points to supply the risers which drop to the radiators. One drop riser may run directly from attic to cellar, and the radiators are supplied from the side of the drop by means of a tee.

In the one-pipe system with dry returns the main pitches away from the highest point, which is directly over the boiler.

The circuit system is used where the boiler is to be placed in one corner of the building and radiators placed upon all four sides, or three of the sides of the building. This steam main should not be reduced in size on this system.

The divided circuit system is best used in buildings where the boiler must be located near the centre of the cellar. The returns from the ends of the mains should be connected together below the water line of the boiler.

Amount of Pressure Carried.

With reference to the amount of pressure carried, steam heating systems may be classed as:

1. Low-pressure systems, where the pressure is between atmospheric pressure and ten pounds.
2. High-pressure systems, where the system is run at a greater pressure than ten pounds.
3. Vacuum heating systems, where the system is operated at a less pressure than the atmosphere.

These three divisions, according to pressure, are capable of an almost endless amount of different combinations and effects.

The simple gravity return job is generally used where the full boiler pressure is carried on the whole job. This is capable of being modified into a low-pressure gravity return vacuum heating apparatus by means of using one of several systems now on the market and intended to meet this demand for low-pressure vacuum heat for residences where an engineer would not be required to run the apparatus.

High-pressure heating is generally employed in large factories and is not generally used in dwellings and blocks.

There are many combinations capable of being formed along the line of high-pressure.

While the machinery of certain portions of any large factory may be operated upon high-pressure, it is found extremely profitable to utilize the exhaust steam in heating the buildings and this is done in several different ways. The water of condensation may be forced back to the boiler by means of steam pumps or steam return traps. two mechanical appliances regarding the use of which the ordinary steam fitter is in great ignorance.

Vacuum Heating Comparatively New.

Vacuum heating is comparatively a new thing and is not generally understood, nevertheless this system is being rapidly developed and improved in all parts of the country and will soon occupy a very important place in the general practice.

A vacuum is a space unoccupied. Atmospheric pressure is the pressure, which, at the sea level, is found to be 14.7 pounds per square inch. On top of a mountain this pressure is much less, per square inch, as the air is thinner. Also on top of a mountain water boils at a less temperature than it does at the sea level (212 degrees Fahr.).

If we say we have ten pounds pressure on a steam job, we mean we have ten pounds pressure above the atmosphere. Now this atmospheric pressure is 14.7. Therefore, we really have 24.7 pounds pressure on that job. Now if we could get rid of the atmospheric pressure we could boil water at 98 degrees Fahr.

In the simple gravity steam heating jobs the air must be driven out of the job each time before the radiators will

thoroughly heat, and this requires steam to the extent of from one to ten pounds, and, of course, the temperature of the water in the boiler is 212 degrees, or more, according to the amount of pressure in pounds.

If the air can be removed from the system, and kept out, or if the system can be so run as to prevent the air getting in, we have a condition whereby we can circulate the steam or vapor in the system, below the atmospheric pressure and can obtain the steam or vapor at a less temperature than 212 degrees Fahr. This is accomplished by several very excellent systems for house heating, differing somewhat in principle, by means of which the air in either forced out of the system, or is drawn out, and the system then operated under a vacuum. It has been found that these systems operate upon a less quantity of coal and give results which are entirely satisfactory.

Hot Water Heating.

Another system of heating which has grown to astonishing proportions is the heating of residences and buildings of moderate height by means of hot water.

During the last two decades this method of heating has increased probably ten fold. There are several different systems of hot water heating, which may be divided as follows:

First—The two-pipe system.

Second—The one-pipe or one-main system.

Third—The overhead system.

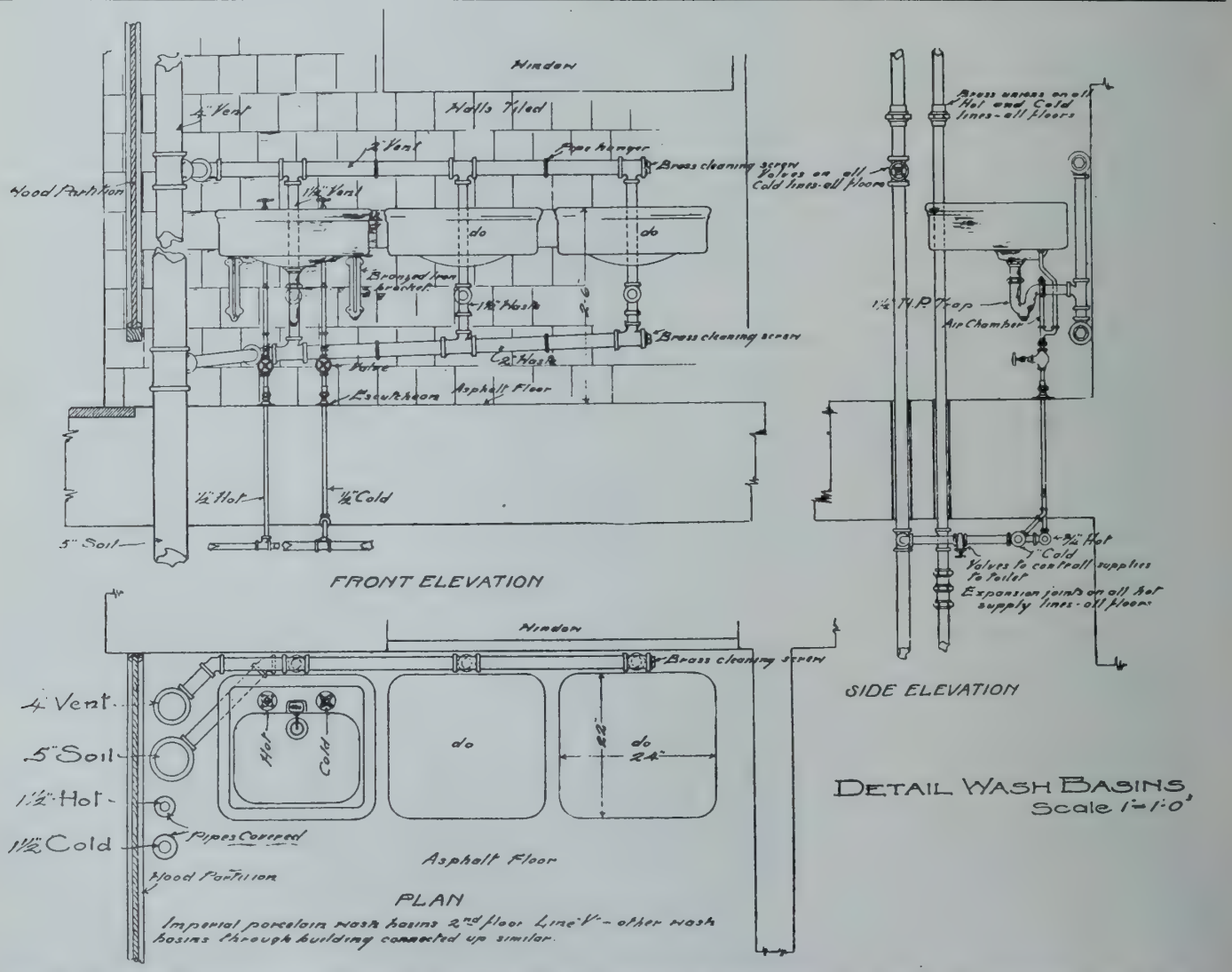
Fourth—Forced circulation.

The two-pipe system is the one best understood for the reason that it is the oldest and has been installed the greatest number of times. It consists of a separate run of supply and return mains, branches and risers and is mostly used on open tank systems and by people who are afraid to venture forth upon different systems. The one-pipe system is very similar to the one-pipe system of steam heating, except that each radiator must have a supply and return, which may be run into th one main, that carries both the supply and return water, in the same direction. During the past five years various appliances have been placed upon the market for the purpose of creating a pressure upon house heating hot water jobs. There has been much discussion for and against as to the merits of these inventions and many doubts have been expressed as to their usefulness. It seems to have been proven, however, that these inventions possess merit and do increase the circulation; that when placed upon a system possessing a sluggish circulation, they greatly benefit that job, and that by using these appliances we can decrease both the size of the piping and the amount of radiation.

Central Station Heating.

Greatly improved methods are now in use for heating many buildings from a central station, and central station heating by hot water is a permanent practice of to-day. A great many large jobs of this nature are located in various parts of the United States.

J. C. Eaton will build a $65,000 residence at Toronto.



Details of Wash Basins in Public Schools, Designed by the Sanitary Department of Board of Education, New York City, and Reproduced From the Engineering Review.

TWO VALUABLE NEW BOOKS.

One of the most interesting books written on subjects allied with the plumbing trade, is the "History of Sanitation," just published by J. J. Cosgrove, of the publishing department of the Standard Sanitary Manufacturing Company, Pittsburg, Pa. Mr. Cosgrove is the author of "Principles and Practice of Plumbing," published in 1906, and "Sewage Purification and Disposal," published this year.

The "History of Sanitation" is a handsomely cloth bound volume of 125 pages 5½x8¼ inches, containing 88 illustrations, 11 of which are full-page, showing in pictures the wonderful evolution from the fountains, baths and water systems of Ancient Rome and contemporary countries to the modern methods of sewage and garbage disposal and the splendid fixtures available for bathing and cleansing purposes in the twentieth century. The reading matter is written in plain understandable fashion and the reader, whether he be a plumber, sanitarian or ordinary citizen, is entertained and instructed as a result of the putting in print of the author's researches regarding the history of the cisterns and aqueducts of the ancient Greeks and Romans, the Babylonian sewage systems, the baths of Pompeii, the sanitation of the dark ages, the cholera epidemics which were the forerunners of the water supply systems of Paris and London, and the recent realization of the necessity of disposing of sewage other than by discharging it into streams used for water supplies. The book makes interesting reading and should be in the library of every master plumber, to be loaned when occasion warrants to customers interested in sanitary history. It sells at $1.50 and can be obtained duty and postage prepaid at the publisher's price from the Technical Book Department of the MacLean Publishing Company, 10 Front St., east, Toronto.

"Sewage Purification and Disposal," another new book by Mr. Cosgrove and issued by the same publishers, is a larger volume of 222 pages uniform in size and binding, containing 71 original illustrations and 24 tables, the price being $3, the same as "Principles and Practice of Plumbing." Both of these works can also be obtained (without trouble in passing customs) postpaid at the publisher's price by ordering through the Plumber and Steamfitter's Technical Book Department at the address given above. The author, in this work, shows the method of constructing various types of sewage purification plants. The illustrations and the language used are simple in order to make it possible for any reader with a reasonable amount of knowledge of the subject to plan and proportion a sewage disposal works. It is just such a book as this that the master plumber should study if he wishes to be considered an authority on the construction of either a municipal sewage disposal plant or the septic tank system of a country residence as the understanding of the principles of the larger problems make it easier to successfully contend with the smaller systems.

Master plumbers generally should have volumes of these books for reference in order to be able to readily secure information on subjects outside the run of everyday experience.

MOTT'S NEW CATALOGUES.

The handsomely gotten up plumbing catalogues of the J. L. Mott Iron Works, New York, illustrate in an interesting way the extensive lines produced by this company. Nothing is lacking that the plumbing science of to-day can suggest, and a glance through the books will show how artistic and useful are the productions of this firm. One number illustrates over twenty bathrooms, covering a wide field of taste, and include not only the very finest goods, but others of moderate price. Beautiful illustrations of modern tiling effect are given, and the many sketches show how bathrooms can be made most artistic, while at the same time exceedingly convenient and sanitary. The other catalogue represents a very fine line of moderate priced fixtures, not only in enameled iron ware, but in porcelain. W. J. Wall, 83 Bleury St., Montreal, is the sole Canadian agent.

THE HONEYWELL SYSTEM.

The Honeywell Heating Specialty Co., Wabash, Ind., have published a little booklet which describes how to properly design and install their system of hot water heating, which, they claim, is "a distinct and decided improvement, and ten years in advance of the old-fashioned method." The explanation of the system itself is very thorough, and the method of instaling is entered into very minutely. Such subjects as the kind of chimney, construction of the building, location of radiators and boiler, size of mains, etc,, are treated in such a way as to show that not even the remotest detail which would help or mar the working of the system is neglected. The information contained in the booklet should be of value to steamfitters, and the book is well worth while writing for. The company say that at the present time there are 21,000 of their systems in use in Canada and the U.S. The book is illustrated with cuts of generators, connections, piping plans, radiator valves, and regulators, belonging to the Honeywell system. M. D. Tillman, the vice-president of the firm, is at present representing the company in Canada, being located in Montreal.

ENAMELLED SOIL PIPE.

The disadvantage attached to the coatings of tar, dead oil, asphalt, and so forth, used on iron soil pipe and fittings, inasmuch that they become in a short time eaten and destroyed by the effects of the acids from the earth, has been overcome by the employment of glass enamel, which closes up the pores of the iron, thereby preventing any possible escape of sewer gas. All rusting, too, is prevented. Pipe and fittings lined with glass enamel have a smooth and perfectly sanitary surface unsurpassed for cleanliness, and they do not corrode or deteriorate by contact with gases. It can be readily understood that drinking water pipes treated in this manner are far superior to any other form. A great feature of this glass enamelled pipe, is that it is a non-conductor, and cannot be attacked by electrical current under the earth. Samples of the Impermeable Glass Enamelled Iron soil pipe and fittings can be seen at the Standard Ideal Co.'s showrooms in Montreal and Toronto.

WINNIPEG'S NEW BY-LAWS.

The Winnipeg city council have drafted a code of by-laws governing the master plumbers for the purpose of using more scientific plumbing in the city in the future. The by-laws are being reviewed at the present time by the civic authorities in conjunction with a committee from the Master Plumbers' Association, and two representatives from the Sanitary Association. The laws are not stringent and the city should have no difficulty, if they are passed, in having the fundamental requirements fulfilled. During the inspection of the by-laws the plumbers will endeaver to have various clauses changed, giving them more authority in the carrying out of the rules. As it stands at present the final authority reverts to the civic authorities, and more specifically to the city engineer. The contention is that the plumbers alone are competent to dictate as to the technical nature of a construction, and further, that they should have a voice in deciding upon the qualifications of an applicant for the plumbing trade. The city engineering department, on the other hand, has several expert plumbers in its employ and the department claims that as a servant of the city it is under obligation to manipulate the trade in order to insure more competent workmanship, and raise the standards of trade in every way.

Letters from Correspondents on Trade Problems

The Editor Invites Short Letters and Sketches Describing Problems Met With or Original Methods of Doing Plumbing or Heating Work— Name of Writer Required Though Not Necessarily for Publication.

CRUSADE AGAINST BAD PLUMBING

Editor Plumber and Steamfitter. While many big enterprises and improvements for the beautification of the National Capital have been or are rapidly nearing completion, among them being the Union Station, the U. S. National Museum, the Plaza, the Senate Office building—the local health department and the plumbing office of the district government are continually on the alert to unearth—and correct—insanitary conditions. For the past few months, however, there has been unusual activity on the part of the health officer, due to the fact that at the last session of Congress an appropriation was made for the appointment of an additional sanitary inspector, and by his appointment there was one man assigned to look after the care and keep of lunch rooms. The continual crusade of the health department for the cleanliness of the city, has for its ultimate object the stamping out of every cause for the spreading of disease as well as having the city look both clean and pleasing to the eye of its citizens and the strangers who are constantly visiting our capital.

Dr. Wm. C. Woodward, health officer of the district, has had his corps of assistants, the sanitary and food inspectors, going into every nook and corner of the district, searching for the possible bearers of germs, which have been found to be due to bad plumbing, drainage, dirty yards, filthy alleys, houses, hotels, lunch rooms, obstructed sewers, and many other causes. Up to the present time—that is for the past quarter—the records in his office show that 13,058 inspections have been made on cases of nuisances ; 71 cases of defective plumbing, which were after one inspection referred to the inspector of plumbing, for further investigation and action ; 90 sewer and water connections ordered and made. In a total number of cases, 264, which were taken into court, only 2 were lost, and 68 forfeited collateral.

Disease Breeding Hives.

In many of the cases the plumbing was found to be bad, defective and leaky, and as stated such were referred to the plumbing department which is invested with authority for ordering the correction of unsanitary plumbing.

That this rigid inspection of the health office and its efforts to make Washington a clean and sanitary city, is bringing to light some very unhealthful conditions which exist in the National Capital is shown by many of the cases which are found in their work of unearthing "disease breeding hives." Cases have been referred to the inspector of plumbing, where very old and foul water closets—even those encrusted with foecal matter—were found in the same room where people sleep—as well as in kitchens where food was prepared for the table of an apparently 'clean' cafe and the unsuspecting public sat at the nicely covered table and ate the food which had been laid aside—awaiting an order—(in the room in the rear of the cafe) for the germ-carrying fly to come from these foul and ill-smelling water closets and light and feast on the meats, soups, vegetables, pastry, and other food-stuffs in the kitchen : and when this cafe owner is ordered to "clean up" and tear out the closet, urinal and all plumbing in the kitchen, and provide a suitable location for fixtures of a modern type, in most instances he at once thinks of the cost and tries to "just skin" the regulations. Fortunately this class, however, are in the minority and the power given the authorities is such as to require ample light and ventilation, and that a water closet can not be located in any sleeping room, or in any room, apartment or vault which is not in direct communication with the outer air, and also requires that the water closet, urinal, etc., shall be in a separate apartment, enclosed by a tight board partition, and provided with at least four square feet for light and ventilation.

Although this crusade was commenced long before the opening of the International Tuberculosis Congress, held here last winter, yet it has appeared to have taken on quite an impetus since the close of the congress. This international body did a great deal of good for this city by its various exhibits of the cause and spread of this dread disease, as well as the remedies known, and it is only hoped that all of those who were interested in the work and exhibits will not soon forget the instructive features laid down, for it is only by hearty co-operation of everyone, by absolute cleanliness in surroundings and practices, that this dread disease may be partially stamped out.

While much has been said for the work of the "crusade" I hope that the effects already apparent from its work, will not only be beneficial to this city, but I trust that these few facts of what has been accomplished here by hard and conscientious work on the part of the officials of the District Government will carry the seed for like crusades in the other cities. They all need "cleaning up." Of course there are some cities considered "clean" so was the National Capital—but there is certainly work of this kind needed everywhere, even though it be done periodically.

J. F. BRADY.

Washington, May 4.

NOVA SCOTIA PLUMBERS INCORPORATED.

Editor Plumber and Steamfitter,—I am very pleased to inform you that by an act passed through the Legislature of Nova Scotia which became law on April 23 of this year, we are now an incorporated body under the name of the Master Plumbers' Association of Nova Scotia.

Our local association met at Halifax on April 27 and resolved to start anew and try and get some life in the work. We had a grand meeting and ended up with a banquet at the Queen's Hotel. I brought up the matter of inviting the National Association to Halifax this summer, but we felt that as we were just about starting over again we were not in a position this year, but hope to make a bid next year. I wrote to National Secretary Munday to this effect.

I regret very much to hear that it seems impossible to reorganize the trade in Toronto and it is to be regretted that so very few of the plumbers in Canada can be made to see the advantage of an association. Probably they will some day if the National Association should go out of business.

I firmly believe that in Nova Scotia our association will stand, and if the plumbers in the Upper Provinces do not get together the best thing we can do in Nova Scotia is to separate from the National Association, and hold our own convention annually.

I congratulate you on the interest you take in association work and for the good work you are doing through the columns of The Plumber and Steamfitter. Hoping to have the pleasure of seeing you this summer.

F. DEXTER

National Vice-President for N.S.

Truro, N.S., May 4.

SOFT COAL BOILER.

Editor Plumber and Steamfitter.—While there is no doubt some opportunity for marketing a boiler capable of burning soft coal we do not feel that we are in a position to commit ourselves at the present time. We are interested, however, to note the remarks of Mr. McDonald in The Plumber and Steamfitter of April 15, as no doubt there is a good field for this type of house heating boiler, capable of burning the grade

of fuel mined in this country. No doubt the matter will be carefully considered when the opportunity appears to be right.

American Radiator Company.
W. S. WIGGINS.

Brantford, April 29.

* * *

Editor Plumber and Steamfitter,—Our attention has been drawn to the article in the April 15 number of Plumber and Steamfitter, and in reply would say that we are manufacturing steam boilers which are adaptable for hard coal, soft coal or wood as fuel. These boilers are in successful operation in every province of Canada, using the local fuels and giving the very best satisfaction.

Gurney Foundry Co., Limited.
E. H. GURNEY.

Toronto, April 29.

* * *

Editor Plumber and Steamfitter,—We are manufacturing a line of sectional steam and hot water boilers, specially constructed for burning soft coal. We have 22 sizes each for steam and hot water with grate surfaces varying in size from 19x18 to 50x96 inches, and rated in steam from 300 to 8550 feet, and in hot water from 500 to 14,125 feet. We also manufacture round boilers specially adapted for burning soft coal, and believe that this is something new to the Canadian trade. We expect to have new catalogues showing same at an early date, and in the meantime advise that we make them in the following grate sizes: 15, 17, 19, 22, 25, 28, 31 and 34 inches.

Gurney, Tilden & Co., Limited.
T. W. KIRBY.

Hamilton, April 27.

ALUMINUM SOLDERING SOLUTION

Editor Plumber and Steamfitter,—Kindly publish a solution for soldering aluminum as very few here know how to do it?

F. L. T.

St. John, N.B., May 8.

The Canada Metal Company, Toronto, manufactures a solution for soldering aluminum, their formulae, like most others, being patented. There is no solder which operates with aluminum in the same way that ordinary solders operate with copper, tin, etc. There are two reasons for this. Aluminum does not alloy readily with solders at temperatures as low as the other metals require, and it is consequently necessary, in soldering aluminum, to use a much higher temperature. Furthermore, aluminum alloys with lead only with great difficulty, and with but a small proportion of lead at that; consequently, lead solders are useless with aluminum. The surface of all aluminum is covered with a thin, invisible coating of aluminum oxide. This coating forms instantly on the surface of aluminum, and is very refractory; and its presence is responsible for the high resistance of aluminum to corroding agents, since, although aluminum itself is soluble in a great many chemical compounds, this protective coating of oxide is insoluble in almost everything excepting hydrofluoric acid. While in general this coating of oxide is beneficial, in that it forms a perfect protection to the aluminum underneath, it is, by reason of its efficiency in this particular, responsible for the principal portion of the difficulty which occurs in soldering aluminum, as naturally no solder will alloy with aluminum oxide.

For soldering aluminum, the best soldering medium, according to Le Vie Automobile, is an alloy of that metal and tin. The proportions vary according to the extent to which the soldered articles are intended to be worked; 45 parts of tin and 15 of aluminum forming a good solder for such as are to be shaped afterward. A harder solder, but less easily applied with the soldering iron, is prepared by melting 4½ parts of red copper, to which are then added 3½ parts of zinc and 4½ parts of tin, the heating being continued until a homogeneous alloy is obtained, which is cast into sticks.

IRON AND STEEL PIPING.

Editor Plumber and Steamfitter:

For some time now the use of galvanized iron and steel piping for work above ground has been receiving the most serious consideration in view of the fact that a new plumbing code is at present under consideration by the council, and I have been following the discussions in The Plumber and Steamfitter and other trade journals with much interest.

With one exception all the buildings in Winnipeg in which galvanized wrought iron soil and wastes have been used are of recent construction (1 to 5 years) and present no points of interest to this discussion, as a recent examination showed no appreciable corrosion. The exception refers to a building in which the plumbing was installed about 18 to 20 years ago. The pipes used were plain black wrought iron, except the fittings and trap, which were cast iron. Aoout a year ago I had occasion to remove the house trap, and a part of the 6-inch drain which were above ground, and have samples of the wrought iron pipe, cast fittings and trap in the office. The wrought iron pipe is ¼-inch thick and 6 inches in diameter, and shows only surface corrosion, except on the internal under side, which is "pitted" in places, not more than 1-3 of its thickness. This is contrary to general experience as it is generally the upper internal surface on a horizontal pipe drain which corrodes most. There is no marked corrosion on the external surface of the pipe, not even on the exposed threads, but this may be due to the surroundings of the pipe, which, although in a cellar were fairly dry, and to the fact that little or no hot water was passing through the pipe to induce condensation on the external surface. The cast iron fittings and trap are in splendid condition and showed only slight surface corrosion, more marked on the exposed threads.

If such a pipe without any protective coating will last 18 years with so little deterioration, comparatively speaking, then it is natural to suppose that a galvanized wrought iron pipe should have a very much longer life.

A chain is only as strong as its weakest link and decidedly the weakest point in a wrought iron pipe is at the thread, as not only is the strength and thickness of the pipe diminished but the protecting coat either of galvanizing or asphalt, is removed and this is especially the case when the thread is cut too far up the pipe and a large part of it exposed after being screwed into the fitting. However, there has been an effort recently to diminish these objections, by more accurately threading the pipe so that little or no thread is exposed, or by painting the exposed threads with hot asphalt or japan. This is a point which deserves very careful attention, as in the process of galvanizing pipe, it is cleaned with acid before being dipped in the zinc bath, and this acid eats away the natural skin on the iron so that when the galvanizing is chipped off or cut when threading, the pipe is more readily corroded at this point.

Although galvanized wrought iron pipe has its disadvantages, I am strongly of opinion that it is the most suitable material for soil pipe or waste pipes in high buildings, and does not present the more serious objections to be found in cast iron piping with lead joints, in respect of unequal ratio of expansion and contraction in two metals such as iron and lead, or the lack of rigidity to resist strain in case of settlement in buildings, etc. As I remarked already, the weakest point in a galvanized piping job is the joint, and I think probably the next step in the evolution of soil pipe will be an improved flange joint for general use in work of this nature.

Coming back to the question of the galvanized coating of wrought iron pipes

I might mention rather a unique experience one of our leading plumbing firms had recently. Extensive internal alterations were carried out about four years ago on a large building necessitating the complete removal of the water service pipes. In doing so "Standard" galvanized iron piping (½-in. to 1¼-in.) was used throughout for cold and hot water, the same class of piping being used for both services. The cold water system has given no trouble, but for some time back considerable inconvenience has been caused by the hot water pipes corroding and "pitting" through from the inside and up to the present time about 300 feet of the piping has been renewed. The only exceptional circumstance in the case presented so far is that an old iron tank decidedly corroded was left in when the system was overhauled. It is not very clear to me yet whether this would account for the marked corrosion and "pitting" in the water pipes referred to, but I intend having a sample of the water in this tank analized to ascertain if a chemical re-action is set by any ingredient in the water and the rust in the tank, which would result in acidity and thus destroy the galvanizing in the internal coating of the pipes.

JAMES SMITH,
Plumbing Inspector.

Winnipeg, April 29.

SEWAGE PUMPED INTO SEWERS.

The Plumbers Trade Journal, New York, answers an inquiry from "H. S.," Revelstoke, B. C., for information as to the method adopted by sanitary engineers with regards to the disposal of sewerage from buildings which have four and five stories beneath ground level.

In answer the Journal says this question has become an important one in many of our large cities, where sewage of fixtures located below the sewer level must be cared for.

The sewage from points above the sewer level in such buildings is of course handled by gravity in the ordinary manner. Below the level of the lowest fixtures, generally set in a pit, an automatic sewage ejector is placed, and into this the low-level sewage is carried. As sewage rises in the ejector it raises a float, and when the latter rises to a certain point it automatically closes a check on the inlet pipe and vent pipe of the ejector, and admits compressed air or steam pressure upon the surface of the sewage, thus forcing it out through the discharge and up into the gravity system and thence into the sewer. In large buildings many thousands of gallons of sewage are thus handled hourly. In the case of surface water, sump tanks care for it in a manner similar to the above.

Gossip of the Canadian Trade

The heating of Strathcona hospital, Mount Forest, was installed by J. P. Noonan.

Donovan & Brennan's plumbing shop at Halifax was destroyed by fire on May 6.

G. & E. Blake, St. John, have the plumbing contract for the A. H. Wetmore residence there.

The large amount of building now going on in Ottawa should give the plumbars there a full complement of work.

H. G. Vogel Co., Montreal, have been awarded the contract for the instalation of a sprinkler system in the Slater Shoe Company's factory there.

Toronto has an agitation on its hands as to the neccessity of building a filtration plant for its waterworks system, for which money was voted last January.

The Standard Sanitary Mfg. Co. are removing the plumbing supplies from the Labatt showrooms, Toronto, to their premises on Richmond Street, that city.

E. J. Laidlaw, formerly with the General Brass Manufacturing Co., Toronto, has joined the traveling staff of the Standard Sanitary Manufacturing Co., Toronto.

J. H. Gunter, for many years the local manager for the Bell Telephone Co. at Listowel, has decided to open up, equip and maintain an up-to-date electrical store at that place.

Wood-Vallance & Co., Hamilton, have secured the contract from that city for supplying 800 feet of six-inch wrought iron pipe for the connection between the city sewer and that on the mountain.

The Colbert Plumbing & Heating Co., Victoria, successors to John Colbert, have bought a piece of property on Fort Street, that city, and will at once erect a two-storey building for their own use.

John Williams, Toronto's civic bridge engineer, died on May 2, after having suffered several months from stomach trouble. The deceased engineer had charge of the instalation of Toronto's public convenience stations.

During the month of April permits were issued in Toronto for the plumbing and drainage of 626 buildings, making a total of 1,518 buildings from January 1 to April 30, as compared with 1,032 for the corresponding period last year.

F. R. Litster, of the Litster-Green Plumbing Co., was given a farewell banquet on the eve of his departure to the Peace River district, where he expects to spend a few months. Mr. Litster is very popular among the local master plumbers.

J. E. Farrell, North Bay, called on Plumber and Steamfitter at Toronto last week on his return from a holiday trip to Detroit, Cleveland and other American cities, Mr. Farrell reports a bright outlook for business in the north country this season.

E. A. Roe, Peterboro, who has for some years been connected with the Canadian General Electric Co., in the electric meter department, has been appointed by the Dominion Government, inspector of electric meters for the Province of Alberta.

M. D. Tillman, of the Honeywell Heating Specialty Co., Wabash, Ind., has suffered a bereavement in the death of his father, and has been away from Montreal attending the funeral at Wabash. Mr. Tillman hopes to be back in Montreal shortly.

Geo. E. B. Grinyer & Co., Guelph, have removed to their new store on the Market Square, and have made extensive alterations in order to cope with increasing trade. They have a very large show window and make a fine display of plumbing lines.

T. J. Thomson, Ltd., Owen Sound, capitalized at $40,000, is a newly incorporated company which will engage in the hardware, tinware, stove and plumbing business. The incorporators are T. J. Thomson, T. W. Thomson and Leonard Ferguson, all of Owen Sound.

Another Victoria plumber who will build is C. M. Cookson, who has to move from his present quarters to make way for the new building of Watson & McGregor, plumbers and hardware dealers. Mr. Cookson has secured a piece of property and will build at once.

Alex. D. Bruce, who for over six years has been connected with the J. B. Armstrong Co., Guelph, severed his connection with that firm to take a more responsible position in the office of the Standard Fitting and Valve Co., where he will have charge of the office work.

The Vancouver Gas Company is planning a large plant on the waterfront of Burrard Inlet, and has purchased for $100,000 property at Hastings, immediately east of the city proper. It is proposed to instal a plant that will meet the needs of the city for years to come.

George W. Aird, for the past two years manager of the Standard Fitting & Valve Co., Guelph, has resigned his position, though he still retains his interest in the firm, and will leave shortly for his home in Troy, N.Y. Before going away a number of Guelph friends tendered a banquet to Mr. Aird and presented him with a gold watch fob.

D. J. Morgan, formerly of Wray & Morgan, master plumbers, Toronto, but

for the past couple of years an East Toronto hotelkeeper, was one of the unlucky 41 who had their licenses cut off by the Toronto License Commissioners this year. "Dan" made a motor boat in the cellar of his Toronto residence the winter before he commenced sailing schooners across the East Toronto bar.

The Standard Sanitary Mfg. Co., of Pittsburg, which recently acquired the plumbing supply business formerly conducted in Toronto by Somerville, Ltd.,; Labatt & Co., and the General Brass Works, has been granted permission by the Secretary of State for Canada to change its name to the "Standard Sanitary Mfg. Co.," and will also increase its Canadian capital from $250,000 to $500,000.

Lindsay's ozone filtration system is now in working order. The two prefilters, or sand filters as they really are, can filter a total of 1,500 gallons a minute, which is 50 p.c. more water than the contract between J. H. Bridge and the town calls for. The water then passes through the ozone process. Mr. Bridge expects the town to take over the plant in a few days. Sherbrooke and Pembroke are watching the result of Lindsay's experiment and may instal similar systems.

In the revision of the new plumbing by-law, which is being taken up by a civic committee of the Vancouver council, a change has been made to compel two inspections of the plumbing of each building before a final certificate is granted. A water test is to be required after the roughing-in, and a smoke test after the completion of the entire work. Another new feature is the demand of an inspection fee of $1 in all cases where the plumbing inspectors have to make extra trips to premises because of work which is found faulty on the first inspection.

The Master Plumbers' Association, of Montreal, have left their old quarters and have taken offices with the Builders' Exchange, on the top flat of the new handsome Eastern Townships building, corner of St. James and Victoria Square. The change will be of great benefit to the association. Apart from the fact that the old Plumbers' Hall was at the wrong end of St. James Street, the new quarters are not only more commodious and up-to-date, but the members will be in better touch with builders and contractors. Grouping these associated industries under one roof helps forward business, and tends to better relations all the way round.

The Nutana, Sask.. school board will build a new eight-room school at a cost of about $30,000. The plans of W. W. La Chance were accepted and excavating will commence at once on the site.

New Buildings, Water and Sewerage Systems

Municipal Undertakings.

Olds, Alta., proposes to construct a fire protection system.

Waterworks and sewerage systems are proposed for Chapleau, Ont.

Yarmouth, N.S., is seeking authority to issue $80,000 for waterworks purposes.

Portage La Prairie ratepayers will be asked to vote $50,000 for waterworks purposes.

On May 15 Owen Sound ratepayers will vote on a by-law to raise $125,000 for waterworks purposes.

The Montreal water commissioners want $28,000 to lay water pipes on some dozen streets in that city.

A sewerage by-law will likely be submitted to the Orillia ratepayers at an early date.

The Oak Bay municipality are to raise $30,000 to put in the new waterworks system.

Edmonton hos decided to instal a number of street drinking fountains this summer.

On May 21 at Carman, Man., a by-law will be voted on to issue $25,000 worth of waterworks debentures.

An extensive programme of sewer and waterworks extension is planned for construction this summer at Prince Albert.

Vernon's waterworks extension is estimated to cost $58,000, A by-law for the construction of this work will be voted upon.

A by-law will be voted on at Wetaskiwin, Alta., to issue $7,000 debentures for the purpose of improving the fire fighting system.

A recommendation has been passed that a by-law be submitted to the Brandon Council authorizing the issue of debentures for the construction of a trunk sewer.

Henault & Heffernan, Montreal, have been awarded the contract for laying of a system of sewers for the town of St. Pierre, to cost $100,000.

City Engineer Ker of Ottawa will prepare plans for the drainage of the western end of Hintonburg. The cost has been roughly estimated at $100,000.

The Hamilton Sewer Commision has decided to construct sewers in the annex on Chase, Emily and Clinton St. at a cost of $16,000 ; also a sewer on Hunt Street.

A start has been made with the work of constructing Revelstoke's sewerage system. The central section will be pushed, and it is expected that it will be completed by October 15.

Estevan, Sask., ratepayers have approved by-laws to raise $30,000 for a water works system and $10,000 for a trunk sewer, and tenders addressed to L. A. Duncan, secretary-treasurer, will be received until May 19, for construction of the two systems comprising 7,300 feet of water mains, 2,400 feet of tile sewer, also steel water tower, gasoline engines and power pump.

The contract for the excavating and laying of the pipe for the New Liskeard waterworks extension was given to Hill & Clark, their price being some $2,642.12. The iron work called for tenders from Canada Foundry Co., Toronto ; Canada Iron Corporation, Montreal ; Gartshore-Thompson Co., Hamilton ; Beverley Robinson Co., Montreal. The first two named offered the iron pipe at $33.60 per ton, the former being accepted. Four tenders were received on valves, hydrants, etc., Canada Foundry Company being the lowest.

The programme of improvements laid down by the Saskatoon city council this year includes about four miles of sewer and waterworks, bringing the total mileage of sewer laid up to thirteen and three-quarters and water pipe twelve and one-half miles. Three contracts for sewer and water have been let and operations may begin any day. Section one went to H. Welsh for $13,725; section two, R. Bolton, $17,900; section three, W. Cook, $9,756.25. When these contracts are complete the systems will extend to the new city hospital and Alexandra school. Numerous applications have been made for connections from private houses and other buildings and tenders are now being called for on laying sewer and water house connections.

General Building Notes.

H, S. Osler, Toronto, will build a $10,300 dwelling.

Campbell River, B.C., will have a $12,000 hotel this year.

John Shanahan will build a $10,000 store at Vancouver.

Thirty new dwellings are about to be erected at Kingston.

A new 70-room hotel will be erected at Swanson Bay, B.C.

Prof. Adam Shortt will build a $10,000 dwelling at Ottawa.

Geo. Ambridge, Ottawa, is building a $10,000 row of dwellings.

The Y.M.C.A. propose to erect a $25,000 building at Saskatoon.

R, P. McLennan will build a $25,000 residence at Kitsalano, B.C.

Mackay & Dieppe will build at Calgary a $12,000 business block.

Work has been begun on the $22,000 Langley Street block, Victoria.

C. M. Essery will build two pair of dwellings at Toronto to cost $10,000.

E. B. Butterworth will spend $15,000 on an apartment block at Ottawa.

The Elgin Syndicate will build an $18,000 apartment block at Ottawa.

Excavation has commenced at Calgary on the block for Mackay & Dippie.

G. Nicholson will erect at Toronto five pairs of dwellings to cost $12,000.

Edward Knox, Montreal, has a permit for a store. Estimated cost $8,000.

A permit has been issued to J. M. Brooks for three brick stores to cost $4,000.

Work has commenced on the erection of the $80,000 Ruttan block at Port Arthur.

Tees & Persse, Winnipeg, will shortly erect a warehouse and office building at Regina.

Work will shortly commence on a block of three stores for Scott & Bennett, Galt.

Aylmer is experiencing a building boom and will this year see a substantial increase.

Henschel & Co., of Rosthern, will erect a new store to replace the one recently burned down.

The contract for the $10,000 club house for the Alpine Club at Banff has been awarded.

The Y.M.C.A., Victoria, have started a campaign to raise $100,000 to erect a new building.

Hall & Son, Toronto, have the contract for a $16,000 apartment house for Thos. McIlwain.

A $35,000 apartment house will be erected at Winnipeg by E. M. Counsell and W. W. Cross.

The alterations and additions to La Banque Nationale's building, Montreal, will cost $126,498.

The Dominion Bank has a permit for the erection of a bank building at Montreal, Estimated cost $18,000.

Architect F. Neil Brodie has signed contracts for a self-contained residence for A. H. Wetmore at St. John.

The plans for the Saskatoon branch of the Bank of Montreal are ready and excavating has begun on the site.

Nicholas Garland, Portage la Prairie, will build six modern brick residences this spring at a cost of $3,500 each.

J. L. Skene will shortly commence the building of a modern apartment house of five storeys to cost $150,000, at Victoria.

Prospects for a good building season at Saskatoon are of the brightest, there being a long list of all classes of buildings in sight.

J. A. Jacobs, Montreal, has been granted a permit for a block of stores and warehouses to be built there. Estimated cost $123,000.

Jos. Sawyer, Montreal, has prepared plans for a three-storey building, to contain stores and dwellings, for F. Harel. Estimated cost, $55,000.

Among the building permits issued recently at Calgary are: Wm. Whyte's $1,500 house; J. A. McPhail's $2,300 residence, and O. W. Manzer, $3,500 residence.

Peden & McLaren, Montreal, have awarded the general contract for the erection of a bank building for the Bank of Montreal, at Vernon, B.C., to Byers & Anglin, Montreal.

Plans have been prepared for a $1,000,000 bank building to be erected at Winnipeg for the Bank of Montreal to be modelled after the style of the headquarters of the Montreal office.

W. W. Scott, Winnipeg, is building the following structures at that place: S. M. Burbridge, dwelling, $8,000; C. R. Hegan, dwelling, $6,000; A. N. McPherson, dwelling, $7,000; J. Geddes, $5,560.

Operations have commenced at Hamilton on the erection of the new Y.M.C.A. building. The present building will be remodelled and a large addition made to the rear of it. The work will cost $36,000.

Recent building permits at Winnipeg include: B. C. Cockshutt, two dwellings, $2,000; Dunn & Wallace, dwelling, $4,500; G. W. Allan, dwelling, $22,000; F. E. Sprague, residence, $5,500; H. F. Osler, dwelling, $20,000.

Recent building permits at Vancouver are as follows: Reilly Brothers, two houses, $2,800; J. D. McGregor, two houses, $5,000; J. Kitamura, $300; First Church Scientist, $2,000; G. M. Endacott, two houses, $2,500; J. Dadson, $1,200.

The building season at Prince Albert is likely to be a fairly busy one this year. Some of the buildings in view are a high school, Masonic Temple, stores for the Agnew Bros. Hardware Co., and the Goodfellow block.

Public Buildings.

A $20.000 hospital may be built at Galt.

A $40,000 theatre will likely be built at Regina.

Brantford's new Collegiate Institute will cost $95,000.

A 12-room public school will be erected at Winnipeg.

A new school is being built at Venn, Sask., on the G.T.P.

Plans are now ready for the new C. N.R. depot at Brandon.

There is a proposition on at Galt to spend $15,000 on schools.

The Cobourg, Ont., fair buildings will be remodelled this season.

A new Methodist church to cost $12,000 will be built at Brandon.

The North Vancouver Mission will be enlarged at a cost of $5,000.

Ingersoll will erect a new $1,500 main building on its exhibition grounds.

A by-law has been passed at Ottawa to issue $67,800 for school purposes.

Vernon, B.C., proposes to borrow $30.000 for the erection of public schools.

The Victoria Street Baptist church, St. John, will be enlarged this season.

Tenders are asked for the erection of an eight-room public school at Goderich.

Edmonton will ask Mr. Carnegie for a grant of $75,000 for a public library.

The Orillia council has accepted an offer of $12,500 for a Carnegie library.

W. B. Angus has prepared plans for an extension to the North Bay hospital.

The Salvation Army will erect new barracks at Dauphin, at a cost of $2,000.

A $12,000 addition will be made to the Auditorium theatre at Fort William.

Nearly $6,000 has been subscribed towards the erection of a hospital at Ingersoll.

Kent school, Toronto, is to be enlarged to 31 rooms, at an expenditure of $80,000.

Moose Jaw ratepayers have carried a by-law to raise $17,000 for exhibition buildings.

The Revelstoke, B.C., hospital directors have decided to build a new wing at a cost of $16,000.

Estevan, Sask., ratepayers have approved a by-law to raise $10,000 for the erection of a town hall.

A modern brick high school, to contain ten rooms, will be erected at Springdale, N.S., this season.

The Victoria school board have approved preliminary plans for the new $45,000 school building.

Healey & Macgregor have commenced operations on the new St. Mary's separate school at Calgary.

The trustees of St. James' Cathedral, Toronto, are building a club and school house at a cost of $65,000.

The Saskatoon Concrete Co. have the contract for the erection of a school house at Lake Patience, Sask.

It is proposed to erect a $30,000 build-

ing for the accommodation of various Protestant brotherhoods at Windsor.

A site for the new court house at Medicine Hat has been selected and building operations will start at once.

Plans are being called for on a new collegiate institute at Saskatoon to cost $125,000. A site was recently purchased.

The new Presbyterian church at Calgary is well under way. Another Methodist church is to be built in the same block.

The trustees of the Rosedale Presbyterian church, Toronto, have applied for a permit to erect a church at a cost of $30,000.

All Saints' Anglican church, Ottawa, will be enlarged. A new rectory and other improvements are also under discussion.

The contract for improvements at the County Court House, at Brantford, was let to the Shultz Bros. Company, for $5,000.

Work on the new penitentiary at Prince Albert will be started at once. The building will be 250x50 feet and three storeys.

A permit has been issued to the Sisters of Hotel Dieu, Montreal, for the erection of an additional hospital building to cost $5,400.

Prof. E. Nobbs, Montreal, has awarded the general contract for the erection of a power building for McGill University to Byers & Anglin.

The contract for the erection of a four-roomed school in Ingersoll has been awarded to P. H. Secord & Sons, of Brantford, for $11,311.

The Saskatoon public school board have decided to instal the very best plumbing, heating and ventilating systems in the new school which are procurable.

Queen's University, Kingston, will give employment to a great many men, in the erection of chemical and mineralogy building and an observatory. The three will cost $150,000.

Ingersoll is to have a Carnegie labrary. Some time ago it was decided to accept Mr. Carnegie's offer of $10,000, and a site has now been obtained. The building will soon be in course of erection.

Plans are prepared for extensive alterations at the Kingston penitentiary. The main building, now used for the office, will be done away with, and made into cells, so as to get more room for the inmates. A fine sanitary building will be put up on the left of the main entrance, for female convicts. The deputy warden will have a residence outside the grounds.

PLUMBING AND HEATING MARKETS

MONTREAL.

May 10.—A very good tone is manifested in plumbing and heating lines. The recent cold weather set things back a little, and delayed the opening of the building season. But with the more genial conditions now obtaining trade is swinging in freely and in larger bulk. The opening of navigation has also greatly helped forward business and heavy assorted cargoes are going to river and lake ports. Soil, lead and iron pipe are very good sellers, with the market unchanged and in fair shape.

Plumbers have been fairly busy on jobbing work. The new season's work has not yet started. but it will not be long in coming. Many good contracts have already been secured, and a number are being tendered for. Altogether plumbers have plenty of estimating work before them. Architects continue to be busy on various plans and the permits increase month by month. There is no doubt that the prospects look exceedingly healthy, not only for Montreal, but for other points in Quebec.

SOIL PIPE—Soil pipe is in active demand, Shipping to outside points is in full swing, while the local demand has improved. Orders are not only more numerous, but are for heavier bulk. There are no changes in discounts, and we quote: Light, 3 to 6 in., 60 off; medium to heavy, 2 to 6 in., 70 off; 8 in., heavy, 40 off.

LEAD PIPE—A good movement characterizes lead pipe. Orders are increasing, and the market seems in very good shape. Supplies are ample, with prices unchanged, although a sagging in lead is noticed. We quote: Pipe and waste at 27½ off; traps and bends at 50; calking lead at 5c per pound.

SOLDER—With lead pipe, solder continues to show improvement. The large amount of jobbing work that has been done has naturally helped to stimulate the demand. Orders are not only improving in number, but are for better quantities. The market is firm with prices unchanged at 19½c for half-and-half and 18½c for wiping.

IRON PIPE—The spring demand is now more pronounced, and some heavy orders have gone through. The opening of navigation has helped trade splendidly. Discounts are unchanged at ¾-in. to 4-in., black, 72½ off; galvanized, 62½ off.

RADIATORS AND BOILERS—Business is improving, but the building season is not far enough advanced yet to make trade swing freely. We continue to quote radiators and boilers at 60 off. Steam fittings about 70.

BRASS GOODS—The demand is improving slowly but steadily. A few large orders have been placed, but the majority are on the light side. The market is unchanged and we quote: Compression work, high grade, 60 and 10 off; standard, 70; fuller, 75 off.

METALS—Lead has been cut owing to weakness in the English market. The other markets are firm under a good demand. We quote: Ingot copper, 14c; ingot tin, 32½c; lead, $3.65; pig iron, Middlesboro No. 3, $16.50 to $16.75; Summerlee, $18,75. Heavy scrap red brass is 10c; light copper 10c; heavy lead, 2¾c.

TORONTO.

May 14.—All plumbing lines continue to show improvement and orders received at the supply houses ask for immediate delivery. Soil, lead and iron pipe are leading in demand just now, and solder is a much wantable article. Heating lines are increasingly asked for, and so is enamelware; though both these lines will be more active later on.

Prices are holding firm, with not a change since last issue. Brass goods are expected to undergo a revision in prices, but whether an increase or not is at present unknown. It is likely, however, that the market quotations will partake of a little give and take, some lines showing an advance and others balancing matters by declining. The changes are not expected to be radical.

IRON PIPE AND FITTINGS—Contrary to expectations in certain quarters there has been no advance in iron pipe. 1-in. black is $4.54 and 1-in. galvanized, $6.19. Excellent sales are reported of both these lines. Malleable and cast iron fittings are also active. The former is at 40, and the latter at 70 per cent.

SOIL PIPE—Another splendid seller is soil pipe. Orders are much above those of a year ago. Medium and extra heavy pipe and fittings up to 6-in. are at 70 per cent.; light pipe is 60; and fittings 70 per cent.

LEAD PIPE—Very good trading is passing at present, and prices are satisfactory for sales. Pipe and waste are 27½ per cent. off; traps and bends are 50 per cent., and calking lead is 4¾c a pound.

SOLDER—As with the foregoing lines solder is one of the leading sellers just now. There has been a little fluctuation in price, but the market on the whole has remained fairly steady, and the quotations at present ruling are those of the past several weeks: Wiping 18½c and half-and-half 19c.

ENAMELWARE—While still very active, with demand increasing from week to week, the future holds the best part of this season's business, judging from the numerous inquiries received and the

vast amount of building going on. The uncertain weather of the past month has delayed to some extent the placing of orders, but it means that later on there will be a rush for enamelware, which will crowd the business into a rather smaller compass of time. Prices are unchanged.

HEATING LINES—Boilers and radiators at the low quotations are attractive buying lines. Booking is entirely satisfactory and the year's trading is expected to be nearly a record one.

BRASS GOODS—While brass lines are coming to the front, the revival in trade has not affected them so much as the other plumbing goods. Prices at present are those prevailing for some time past, but revision is expected to take place on a number of brass goods in a few days. These changes, however, are not expected to be radical.

TOPEKA'S NEW BY-LAWS.

A new city ordinance at Topeka governing the work of the plumbers and gas plumbing inspection provides that "On all piping for natural or artificial gas nipples and reducing couplings must be used. In no case will bushings be allowed. All work must be proved and tested with a mercury gauge with no less than a 5-in. column of mercury allowed. All drops on branch lines and openings for side brackets must be square with no nipples allowed. All openings must be closed with iron caps, and there must be no split pipes or broken fittings repaired with cement. In order to avoid trappings all pipes must be graded to veins or drops. The size of all pipes used in buildings must conform to those used by the gas company."

GOSSIP OF THE PLUMBING TRADE.

David Proctor, recently with the Labatt Mfg. Co., Toronto, will in future represent the Standard Sanitary Mfg. Co., as Toronto city traveller.

J. W. McKitrick of the Toronto Furnace and Crematory Co., Toronto, is home from a holiday trip to California.

Condensed or "Want" Ads.

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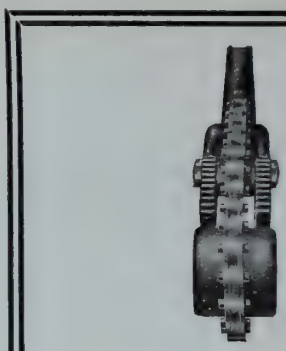

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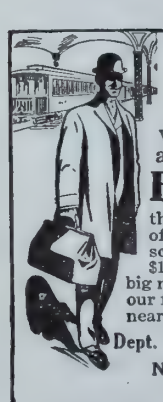

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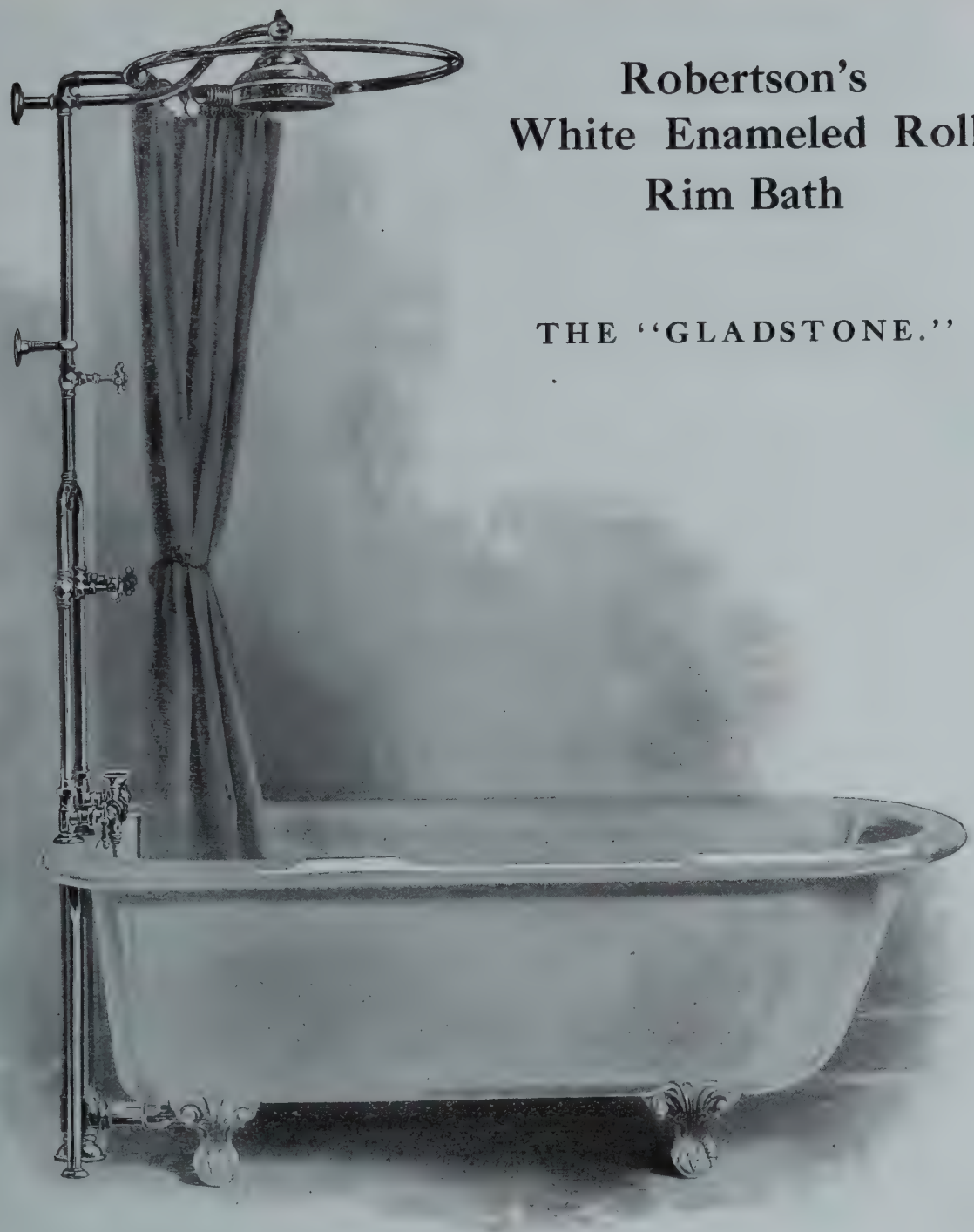

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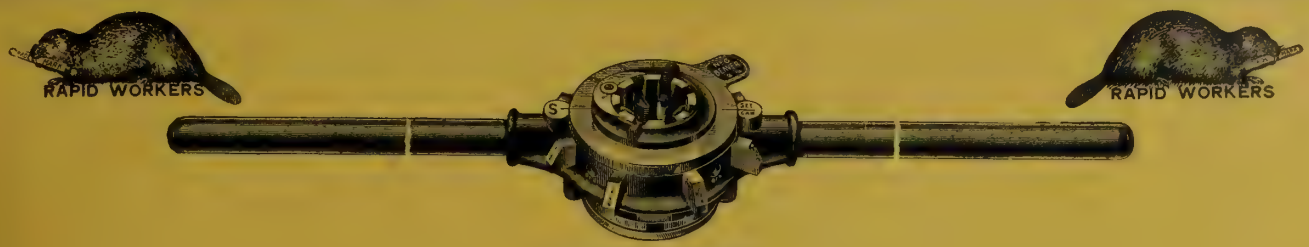

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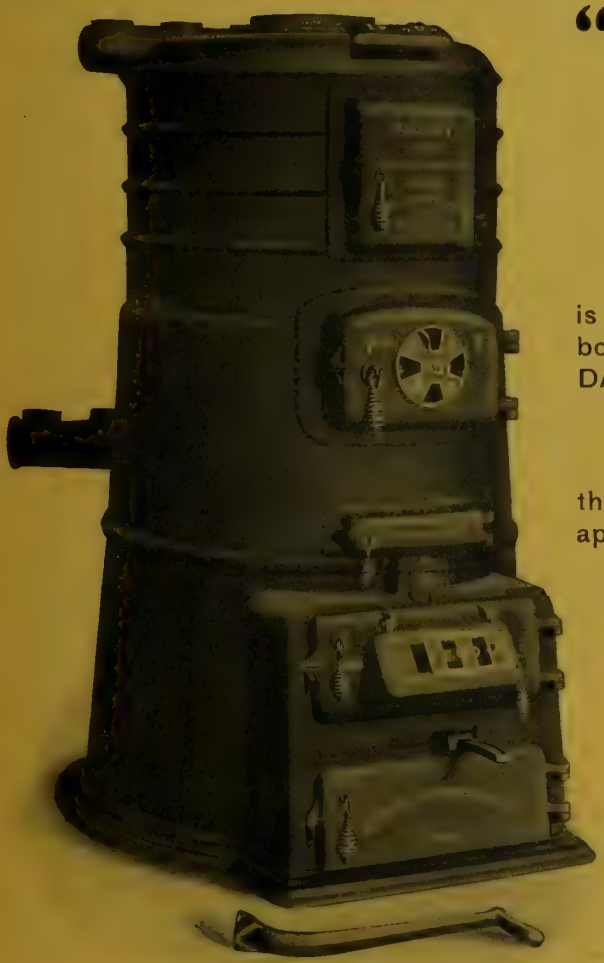

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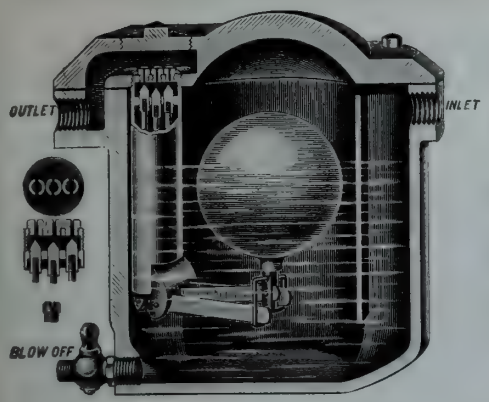

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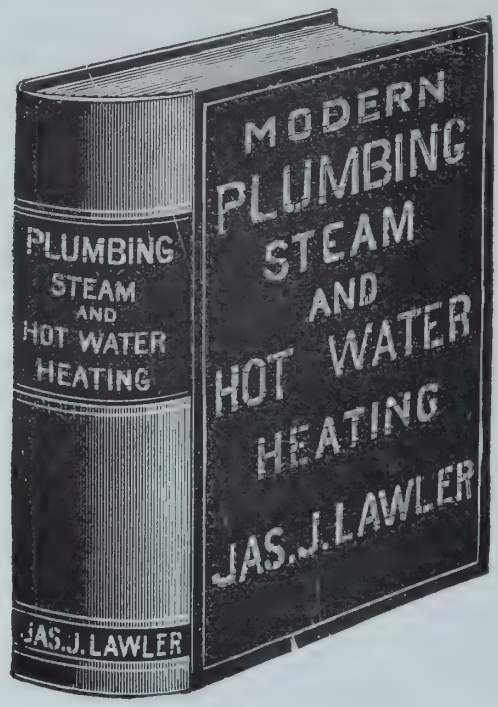

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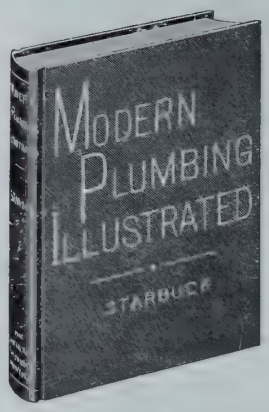

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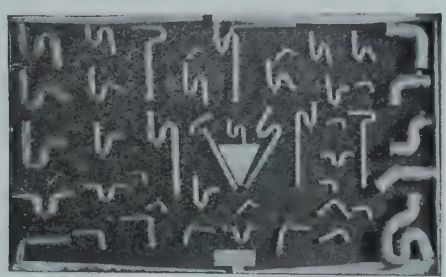

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, JUNE 1, 1909

COUNTRY PLUMBING OFFERS PROFITABLE OPPORTUNITIES.

The profits enterprising master plumbers can make from exploiting the field of country plumbing were referred to in an intelligent manner by J. F. Bennett in a recent issue of the Plumbers' Trade Journal. Now that pressure storage tanks, and pumps of various capacities are for sale at reasonable prices, there is no reason why any fairly well-to-do farmer should be without some of the modern conveniences enjoyed by his city cousin says Mr. Bennett. The main point is to convince the farmer that he can afford these conveniences.

The drainage problem, as applied to sewage disposal, is pretty well solved; and the articles which have appeared at various times during the past few years, ought to give a good idea of how to dispose of sewage from any house isolated from sewerage systems. The septic tank, cesspools, etc., will dispose of that problem.

Water Supply System.

As to water supply, the storage pressure tank of reasonably large capacity, seems, for various reasons, to be best adapted for farm or country residences. It must be borne in mind that the farmer, or country resident, under ordinary circumstances has little or no protection from fire, should one occur. The employment of a bucket brigade seems to be his only recourse in case of fire, and by the time his neighbors, however willing they may be, get around to assist him, the fire will have gained enough headway to render it almost impossible to extinguish it. A hose connection at various points, easy of access, would prove of great value in an emergency of this nature, as a well directed stream of water often checks a fire in its incipiency.

A small system of water works could be installed with connections to various points on the place, such as feed troughs, or watering troughs, stables, and other outbuildings, and lawn, or garden, or any place where he uses water. His lines of pipes, including a line to supply house, to be connected to storage tank. Outside connections, if desired, could have stop and waste cock, operated by a rod, below frost line, in place of hydrants or street washers. The two latter, however, are preferable.

There are many and various types of force pumps, operated in different ways. The pumps operated by hand, or windmill power, are the kind most prevalent in country districts. Hot air and gasoline pumping engines are also available; and, if desired, a steam pump could be employed to pump water, using a steam generator of sufficient capacity, burning gas, gasoline, oil, coal, or wood, as may be desired. It would seem, however, that a pump operated by a horse would be best for a farmer, as he usually has one or more horses that could be employed for a short time daily for this purpose. Now for the kind of argument to convince him of the desirability and advantages of a water supply for different purposes.

Lessens Cost of Insurance.

Insurance men, in estimating risks or insurance, regard fire protection as the most essential consideration, outside of construction, and inflammable or combustible materials. There can be a maximum and a minimum risk, with intervening risks of various degrees, between them. The insurance men grade their rates for insurance according to the risk or danger. A house, minus any means of fighting fire other than a bucket brigade, plus chemicals, or other forms of alleged fire extinguishers, is obviously a greater, or worse, risk than the same house would be if equipped at various points with hose connections and hose, whereby a stream of water could be brought into play in the event of a conflgration.

The difference in rates for insurance as between a house or property with no fire protection, and one with reasonable protection or means of combating fire, is worthy of careful consideration. This idea could be elaborated in advertising matter, in a way which present space at our disposal prohibits.

Household Conveniences.

Again, a sink and a laundry tub will appeal to the housewife, both as a convenience and as a labor saver. Then, a bath tub is not only a convenience, but a necessity, and to a certain extent is a luxury. A nicely enameled, roll rim, cast iron tub, is quite an improvement over the family wash tub, or the good old-fashioned horse trough for bathing purposes. And in cold, stormy, or inclement weather, or in case of sickness in the household, if a person has occasion during the night —or any other time—to use a closet, one or more closets in the house, properly fitted up and supplied with water, will prove vastly superior to the usual country privy or back yard outhouse.

The American farmer of to-day is rather better read than the farmer of one or more generations ago. The rural telephone systems and the rural mail service, together with the low price of good reading matter, such as newspapers, magazines, periodicals, etc., have all contributed to make our country cousin a real well informed cuss.

As a matter of fact the average farmer of to-day is better read and better posted on a variety of general subjects than is the average city man. For one thing he hasn't as many diversions to distract his attention as fall to the lot of the city man. The automobile salesmen frequently make sales in prosperous farming communities. Why not the plumber?

The old joke about the farmer taking a bath once a year whether he needed it or not, may be attributed to the fact that he enjoys very poor bathing facilities. A man who has to take a bath in a bucket on the "lick and a promise" order cannot very well enjoy his bath. But a bath in a nice roll rim enameled tub, supplied with hot and cold water, is liable to prove grateful and refreshing after a hard day's work, and will certainly prove conducive to securing a comfortable night's rest. All of the above ideas, and as many more as may occur to the advertiser, might be used to good advantage in advertising matter.

A great deal of unnecessary labor could be eliminated in getting water to various points where water is necessary, such as troughs, etc. A line of pipe could be run to supply troughs in the yard, and into barn where it could be used to supply water to every stall for horses and cows if desired; with a hose connection for buggy washing, or any desired purpose. This would be quite an improvement over present conditions, under which a farmer has to pump water by hand, and lug it to the different places where water is needed.

Opportunity for Hustling Plumbers.

There are many towns and small cities scattered through the domain of Uncle Sam and in the Dominion of Canada, capable of supporting a plumbing shop which would give proper attention to hustling for country work. There is a vast difference between a plumbing business conducted by a plumber and a plumbing business conducted by a hardware dealer or a tinsmith. The hardware people now have a practical monopoly of work along plumbing lines such as is done in country communities, small cities and towns.

There is a field, a rich and profitable field, for plumbers in prosperous country communities. What will benefit the plumber in a business way will necessarily benefit the man who sells him goods and the manufacturer of those goods. A coalition of the various interests involved, and a well directed campaign of judicious advertising would bring satisfactory results to all concerned.

In concluding, it may be well to remark that a fact well known and recognized in business circles is this: If a person buys something good, from a house and lot to a bicycle or a phonograph, his envious neighbors usually desire to emulate his example or go him one better. A good plumbing or heating job usually brings others, or at least inquiries as to cost of other jobs. The rest is up to the business man.

DISTRIBUTION OF HEAT IN LARGE CITIES.

The distribution of heat and power in large cities, as water and gaslight have been distributed for generations, and as electric light is widely distributed now, is slowly but surely gaining in the favor of capitalists and consumers according to an article in a New York paper. Power, of course, is already distributed to a considerable extent, and the heating of large districts has been accomplished with more or less success in certain communities. But up to the present time the distribution of power and heat is, comparatively speaking, confined within narrow limits.

It seems a most incongruous thing that at this late day there should be individual power plants scattered throughout towns and cities when central stations could keep the wheels moving in factories and business houses as easily and as steadily as they now keep scores and hundreds of street cars in motion throughout districts of far greater area than those covered by the business and manufacturing centres of large communities.

Here and there certain of the smaller towns have adopted the central heating system, and while it has not worked as satisfactorily as could be expected in some cases, even those who are most prejudiced in favor of the old system of house heating cannot fail to see that the new system is the right one and that it must eventually be adopted.

As a matter of fact, there is no more reason why a householder should maintain a separate heating plant, or why a manufacturer or a merchant should maintain a separate power plant than there is why either should maintain an individual pumping station or an individual electric light plant.

Safety, economy and comfort must follow the general adoption of the central system for the distribution

OPPORTUNITY KNOCKS AT THE DOOR.

During the past year hope of reorganizing the Master Plumbers' Association of Ontario has been held in abeyance pending a reorganization of the Toronto Association. The wisdom of this policy has been questioned, however, as it appears that the trade in Toronto are up against conditions which make it impossible to get a large percentage of them together. Then, too, the Toronto masters seem content to wallow in the mire of cut-throat price cutting.

Hope centres now upon the move made by Vice-President George Cooper to bring together a representative gathering of Ontario Master Plumbers at Windsor on June 22, 23 and 24, at the same time as the U. S. National Convention is held at Detroit, when there will be an opportunity for the Canadian plumbers to fraternize with their more experienced brothers from the United States.

Already Mr. Cooper has received assurances of the attendance at Windsor of some of the best men in the trade in Toronto, Guelph, Barrie, Stratford, North Bay, Chatham, and indefinite promise from several other places. Not enough have yet guaranteed to attend to warrant Mr. Cooper issuing a call, however, and unless a dozen or so master plumbers write Mr. Cooper (113 Church Street, Toronto) during the coming week, it is likely that the meeting will be called off.

Are there not any men in the trade at London, Hamilton, Brantford, St. Catharines, Galt, St. Thomas, Berlin, Peterboro, Kingston, Ottawa and other places, sufficiently alive to the benefits of organization to let this opportunity slip by? The entertainment features at Detroit, the trip down the river with the U. S. plumbers, etc., are features worthy of consideration, but the benefits to be derived from getting the trade together are enough in themselves to cause any enterprising master plumber to decide to attend the proposed Windsor meeting.

If your face wants to smile—let it.
Many a man has lost his grip by clinging to one idea.
Some men make a specialty of getting into trouble.
A man may feel his oats and still lack horse sense.

The Berlin Central Heating Station

A General Heating System is in Operation at Berlin, Ontario—The Central Plant and Fittings Used in the Piping Construction—Only a Portion of the City Covered—Factories and Residences Supplied With Steam.

Steam heating on a large scale is comparatively new in Canada, consequently a description of a successful central plant supplying heat to a large area, with some facts relating to the operation of the system, will be of interest.

The system is controlled by the Berlin Central Heating Co., Berlin. The plant is situated on the corner of Charles and Gaukel Streets, as shown by the plan, Fig. 1. This also shows the district supplied, including Main, King, Queen and Ahrens Streets. Besides used for heating the residences on the residential streets, Queen and Ahrens, it is used for heating bath water. The steam is also used by the Shirt & Collar Co., for boiling starch, and in the Berlin Robe & Clothing Co. for boiling dye water.

Fig. 1.—Plan of Steam Mains of Berlin Central Heating Plant.

Fig. 2.—Explanation.

Fig. 1 shows the arrangement of pipe fittings and the explanation is given in Fig. 2. The steam pipe casing is shown in Fig. 3. This, as well as all the fittings, were supplied by the American District Steam Co., Lockport, N.Y. The outside diameter is 4 inches and inside

2½ inches, made of tongue and groove white pine, spirally wound with bonding wire and lined with bright tin.

A double expansion variator is placed every 100 feet. Single variators are

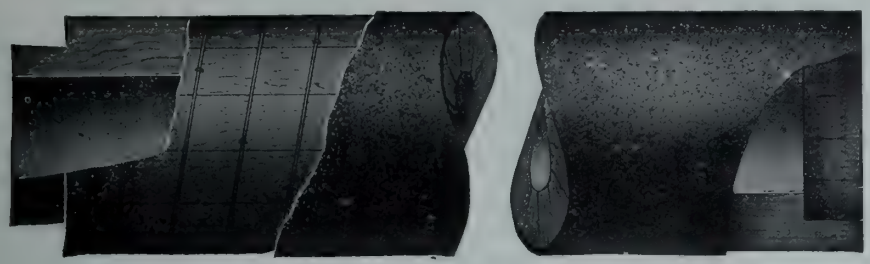


Fig. 3.—Steam Pipe Casing.

used near a street corner. Fig. 4 shows a double variator, and Fig. 5 is a single variator. Fig. 6 shows a line drawing of the double variator. These take care of expansion and contraction.

The double variator has two copper diaphragms and is otherwise constructed with two movable ends, so that expansion and contraction are provided for two sections of pipe, fifty feet of pipe being allowed on either side. These are installed in straight lines between anchor specials.

The single variator is used where slight angles or deviations from a straight line are desired and has but one

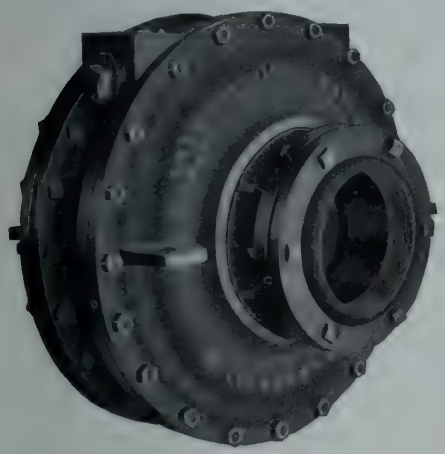


Fig. 4.—Double Variator.

copper diaphragm and one movable end. The pipe attached to the movable end is straight from the point of beginning of expansion, on the anchor special, located fifty feet away.

The anchor specials, Fig. 7, are special fittings which establish the fixed points in the mains from which expansion takes place towards the variator and can be deviated from a straight line by angular wedges between flanges. All connections are taken off the top of variators or anchor specials.

Fig. 8 is a reducing cross, and Fig. 9 is an anchorage cross. Flanged crosses are used at street corner intersections, These crosses are provided with a means of anchorage, and are, when reducing size of mains, Fig. 8, made with eccentric openings and branches are made with sweep angles. To these crosses are bolted packingless gate valves.

House Connections.

Where service from a central plant is to be supplied to buildings already

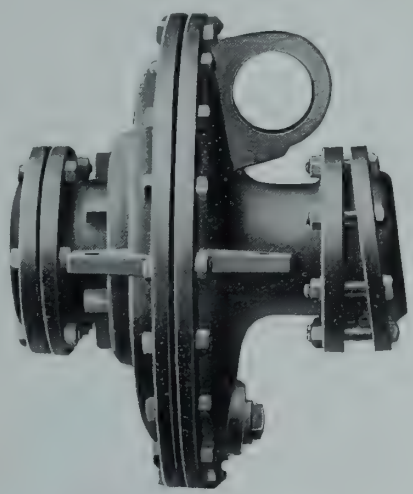


Fig. 5.—Single Variator.

equipped with steam radiation, only a few minor changes are required, made necessary by a different source of supply.

In buildings not piped for steam or hot water the initial cost of necessary equipment is not as great as for a similar service from an isolated plant, due to the fact that a boiler is not required,

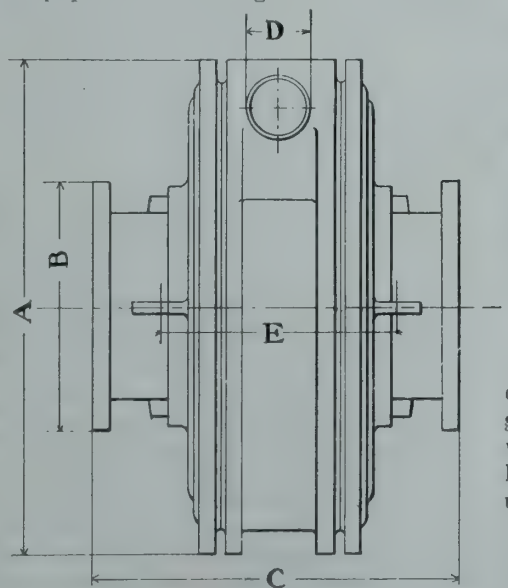


Fig. 6.—Double Variator.

In the event that the customer desires to continue heating water, it is done by supplying steam from the street mains to a special form of water heater which the American District Steam Co. manufacture. The water flows through this and the steam thus condensed can be utilized and measured by meter, as in a building heated by steam. In other words, the steam is the fuel to heat the water.

In giving up its heat to the surround-

Fig. 7.—Anchor Special.

ing water through the tubes in the heater the steam is condensed and this condensation discharged from the trap has a temperature very near the boiling point.

The quantity of steam required to heat in this manner is no greater than the quantity required to heat directly by steam. The condensation from the radiator in the heater, after passing through the trap, is allowed to flow through a continuous cast iron economizing coil placed in each building. The coil is placed in a tin-lined box having an inlet for fresh air and an outlet through a register placed in the floor above for heated air, so that in passing through the economizing coil the condensation transmits its heat to the air, which cir-

Fig. 8.—Reducing Cross.

culates through and around the coil. This gives a supply of warm, pure air, as well as assisting ventilation. The water leaving the coils may afterwards be used for laundry and domestic purposes.

The Central Station.

In the power plant are two McEwen engines, one 500 and the other 320 h.p.

These are direct connected to Thompson-Ryan generators. The power is sold to the city light commission and is used for the street lighting in Berlin.

Two Canada Foundry Atlas water tube boilers of 150 h.p. each are installed. The plant was installed in 1907,

Fig. 9.—Anchorage Cross.

but many extensions have been made to the heating system since then. In case of there not being sufficient steam to supply the heating mains, a pressure reducing valve has ben placed on the boiler so that live steam may be let into the mains.

The steam operated trap and safety feed water regulator were supplied by Williams Gauge Co., Pittsburg, Pa. When the water rises in the trap, the float is raised and admits steam into the regulating valve on feed water line of boiler. The moment that this valve closes, the pressure has a tendency to rise in the feed water line and closes the regulator on the pump.

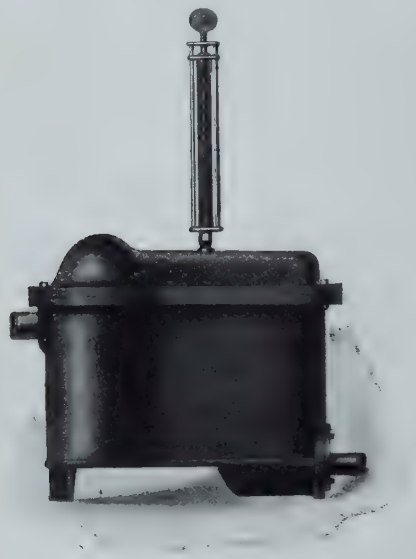


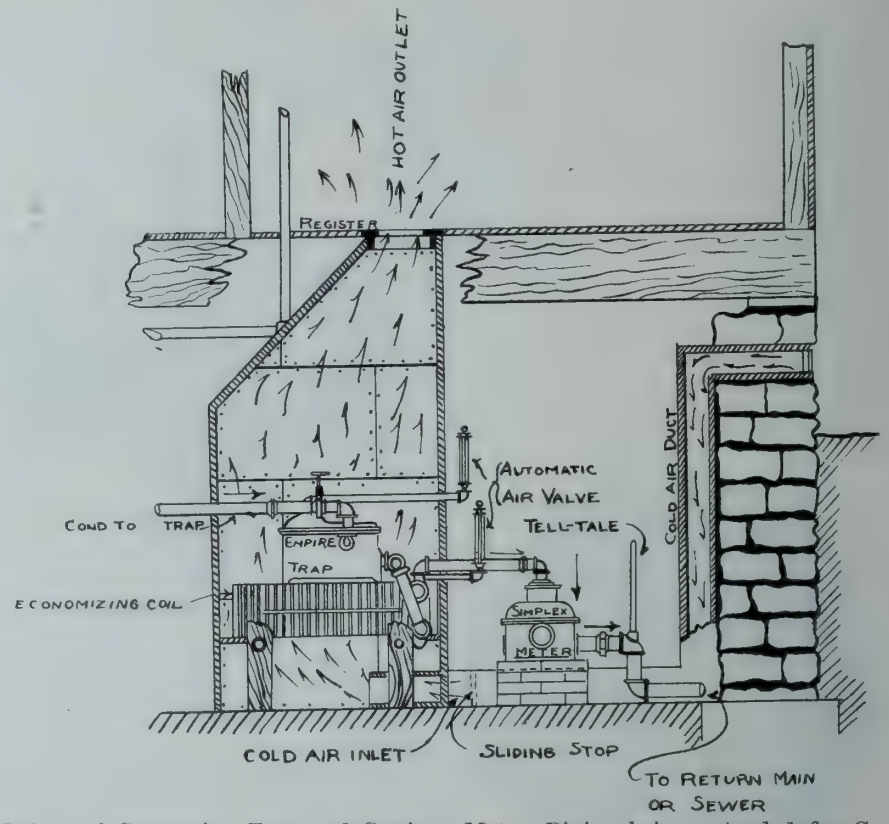
Fig. 10.—Empire Steam Trap.

In the boiler room is a 1,000 h.p. Dakin heater, built by E. Leonard & Son, London. There is also an 800 h.p. Hoppe heater. The water goes through the Hoppe first and then into the Dakin at 212 degrees, then through the economizer, raising the temperature of the water to 375 degrees. The pressure of the live steam at the boilers is 160 lbs. The pressure in the heating system is 5 lbs.

The switchboard contains the necessary instruments. It is a two-panel Vermont marble, with Westinghouse switches, two graphic recorders, ammeters, two General Electric watt meters and Westinghouse circuit breakers.

An indicator board contains Bristol recorders, giving outside temperature, pressure gauges for low and high pressure steam and temperature of stock gases after passing through the economizer. The economizer is a Sturtevant of 1,000 h.p. capacity.

The chief engineer and superintendent of the Central Heating Plant is E. Fitzgerald.



Method of Connecting Trap and Setting Meter, Piping being extended for Convenience in Showing Parts.

HEATING ENGINEERS' COMPANION.

Four good rules on how to figure radiation: the way to order angle radiators; the size of mains; hints on chimneys and flues for architects and builders; these are some of the contents of the handy little cloth-bound "Heating Engineers' Companion" issued by the Gurney Foundry Co., Toronto. The booklet describes the hot water and steam heating lines manufactured by the company, and the lists, ratings and data therein are brought down to date. The "Companion" opens with a description of the "Gurney Oxford Economizer," the latest contrivance for economizing heat and fuel, which was patented in October last and which was noticed in an earlier number of Plumber and Steamfitter. The book is fully illustrated, and the diagrams and tables give minutely much information regarding construction and heating surfaces that should be invaluable to plumbers and heating men. A reference index that shows at a glance where to obtain the information required concludes the "Companion."

SCHOOLS TO HAVE BATHS.

The Chicago Board of Education has decided that every public school in the city will soon be provided with adequate bath room facilities. It was set forth in a report from the school management committee that eighteen schools were entirely lacking in bath rooms and thirteen others were provided with only one or two bath tubs.

HEATING AND VENTILATING ENGINEERS.

The semi-annual meeting of the American Society of Heating and Ventilating Engineers will be held at Indianapolis July 15 and 16. Notices to this effect have already been sent to the members. Papers on "The Ventilation of Buildings" are particularly desired.

Sewage Disposal System for Public Buildings

Prof. H. N. Ogden Describes the System Used in a School for the Blind, With an Average Atendance of Two Hundred.

Located in the village of Batavia is the New York State School for the Blind. The school is situated on an eminence just outside of the village and during the school year has an average attendance of 200. Of this number about 150 are pupils. The drainage of the village and of the school flows through Tonawanda creek and Tonawanda river into the Niagara river.

The water used in the school is supplied by the village of Batavia and approximately 20,000 to 30,000 gallons are furnished daily. In the neighborhood of two miles of water piping is required to distribute and carry this water to the five buildings, which have been connected.

The sewerage system was built in 1890 and contains about one mile of sewer pipe. A building has been erected over the chambers, which have been arranged for treating the sewage chemically. Five of the ten buildings of the school have been connected to the system and furnish only a domestic sewage. The sewer system is not underdrained and the plant cares for the sewage of the entire attendance.

At the present time the sewage enters the disposal house and after flowing through forty feet of six-inch channel and making five ninety-degree turns it falls over the lip of an eighteen-inch weir into a receiving or grit chamber that is eight feet long, six feet wide and about fourteen feet deep. Across the middle of this chamber is placed a wooden gate which extends some six inches above the surface of the sewage, which reaches to within three feet of the bottom of the chamber and which serves to retain the floating matter and to induce sedimentation. From this grit chamber the sewage flows over a second eighteen-inch weir into a settling chamber seventeen feet long and six feet wide, after which it passes over a third eighteen-inch weir and falls three inches into an open channel six feet long, which carries the effluent to the discharging pipe. The chambers are built in duplicate so that one set of chambers may be thrown in or out of use at any time. The discharging pipe is laid in the wall separating the two sets of chambers directly beneath the open channel through which the sewage flows upon first entering the disposal house.

From the disposal house the sewage flows through about three-quarters of a mile of eight-inch to ten-inch pipe into Tonawanda creek. The outlet end of this discharging pipe empties into an uncovered masonry manhole. The channel leading from this manhole is partly closed and the falling of the rock and soil tends constantly to close the channel as well as to fill the uncovered manhole. At one time last year material collected to such an extent that the outlet pipe was closed completely.

Samples of the effluent taken from a

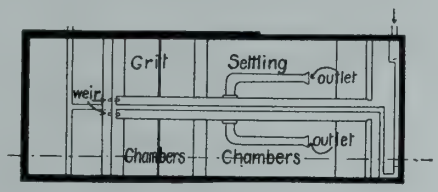


Fig. 1—Plan of Disposal System.

manhole about midway between the receiving and the outlet ends of the discharging pipe showed putrescibility in sixteen hours. The effluent was clear but had an unpleasant odor.

Originally the purification was brought about by introducing into the sewage a solution of alum. This solution was mixed in a barrel and allowed to feed from a tap into the sewage as it entered the purification chamber. The filling of this tap by the alum has caused its use to be discontinued and for three years the sewage has received no chemical treatment whatever.

The concrete lining of one set of chambers is scaling so badly that the use of this set of chambers has been discontinued, and the sewage now runs constantly through one set of chambers without, as before stated, receiving any chemical treatment.

About one hour is required in washing the chambers, which is done every

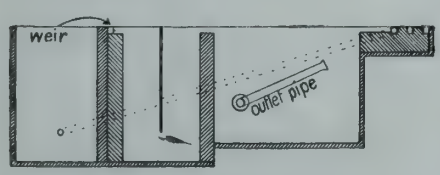


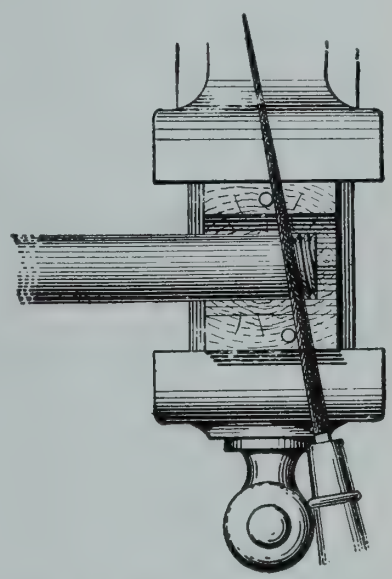
Fig. 2—Sectional View.

two weeks. At each cleaning the solid matter is from two and one-half to three feet deep and about three loads of solid matter are washed upon the sludge area, distant from the disposal house and back of it about 3,000 feet. It is carted away from here three or four times a year and used as fertilizer. When the sulphate of alumina was used it was used at the rate of ninety-two pounds per month, or three pounds per day, and was bought at the rate of $1.90 per 100 pounds.

THREAD CUTTING WITHOUT A DIE.

It sometimes happens that the threads of a bolt or a pipe break off and must be cut without the aid of a screw-cutting die. This can be accomplished very easily with the aid of an ordinary half-round file and a little patience.

Take a block of wood and fasten it in a vise. Make a V groove in the block deep enough for the center of the pipe to come a little below the surface. If the pipe is long, it will be better to make two of these blocks, so as to keep it steady. Now into this groove place a pipe with thread same as wanted, and on one side of the block drive in a nail. Place the flat side of a half-round file against this nail and see that it forms the same angle with the pipe as the thread does. Then drive in another nail on the opposite side of the block, so that it will touch the flat side of the



Thread Cutting Without a Die.

file. Now remove the pipe and replace with the one to be threaded. Hold the file with the smooth side against the nails and while filing keep turning the pipe. The pipe should be rocked backward and forward. That is to say, on the forward stroke of the file turn the pipe in the opposite direction, thereby insuring a much better thread.—J. A. Bergstrom, in the Scientific American.

W. H. Leek, of Leek Bros., heating engineers, Vancouver, and others are interested in a project to supply buildings with steam heat from a central generating station, and have organized the Vancouver Steam Heat Supply Co. They are now asking the city council for permission to open streets and alleys to install their system of pipes.

Cast vs. Wrought Iron for Drainage Work

Respective Merits of These Materials Discussed—Effect of Electrosis on Galvanized Pipe — Internal Smoothness and Alignment—Confidence Expressed in the Life and Durability of Durham Work.

Written for the Plumber and Steamfitter, by Herbert F. Shade, Inspector of Plumbing, Victoria, B.C.

The "Durham System" is a term which conveys to the average mind an erroneous impression, and many are apt to think it is a special system of plumbing, whereas it is only, in reality, a quality of material. The term galvanized wrought-iron drainage pipe, with cast-iron recessed fittings, is proper and conveys the true meaning, but it is somewhat clumsy to handle, and, in what follows, for convenience sake, the term "Durham Work" will be used.

The difference between ordinary cast-iron hub and spigot work and "Durham Work" will be only in the respective merits and demerits of the following points.—

The arrangement of construction being the same in all cases.

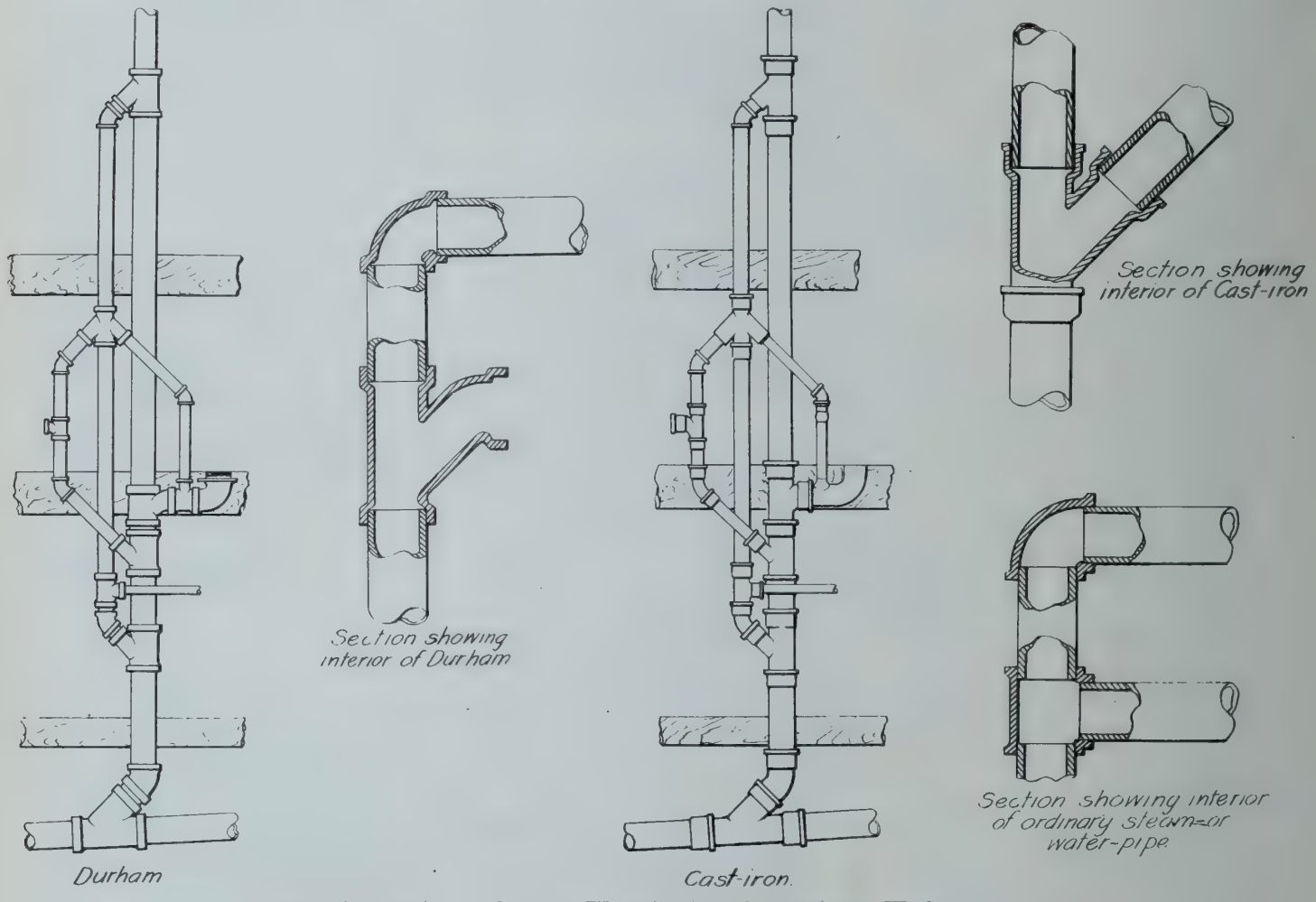
(a) Life of material.

(b) Internal smoothness and alignment.

(c) Strength of joints.

(d) Elasticity of the whole system.

Perhaps the most important of these and one that would decide the use or non-use of galvanized wrought-iron material for drainage is the length of life during which this material can be used with safety. It is obvious that this will only be ascertained by the time and endurance test.


Section showing interior of Durham
Section showing interior of Cast-iron
Section showing interior of ordinary steam or water-pipe
Durham
Cast-iron.

Respective Merits of Cast vs. Wrought Iron for Drainage Work.

Objections to Durham Work.

For years we have heard objections against this class of work, but it has nearly all come from a journeyman standpoint, on the ground that this system completely eliminates the use of lead pipe and lead work, and we know that this is a "soft spot" amongst our first-class journeymen, but recently there has been an opposition from a different source: coming from prominent inspectors and sanitary engineers, who claim that galvanized-wrought waste and soil lines, after 15 years of use have entirely given out and whole systems of plumbing have had to be removed and replaced with cast-iron. As to the reliability of these assertions, I can only say that it is not likely that prominent men, with responsible positions, would make such statements without sufficient grounds for same.

We know, from a chemical standpoint, that electrolysis affects more readily a galvanized-iron pipe than it does one of black iron, owing to galvanic action.

Against this I have known of cast-

iron pipe of standard weight that has been in use for thirty years, with no perceptible depreciation more than the ordinary film or scum that adheres to all soil and waste lines.

500 Fixture Job at Victoria.

The Empress Hotel in Victoria, a seven storey, five hundred fixture job was the first installation of "Durham Work" on the nort Pacific slope, and beink only three years old, I am unable to say at this writing, anything as to the life of this material from my own experience.

As to the respective merits of the two materials on internal smoothness, and alignment, the accompanying illustration shows the possible advantage of "Durham Work" over cast-iron in alignment only.

Regarding internal smoothness, I do not think that either has the advantage, as in all wastes the wetted perimeter soon becomes covered with the film of scum of which the frictional resistance is constant in all cases.

In strength of joints "Durham Work" has no doubt considerable advantage, and I do not hesitate to say that the screw joint will stand a considerably greater outward pressure; but, notwithstanding this, I am confident that the lead and oakum joint, under anything like fair conditions, is wholly and sufficiently strong for plumbing work.

Regarding the elastic properties, that is, which of the two materials will stand the tension of expansion and contraction, with the least effect, there is no need for discussion here, as we know that wrought material is what is used for hot water and steam heating work. where anything that could not stand expansion wouldr be of no use.

Expansion of Cast Iron.

Cast-iron work, when outside, and not properly supported at its base and elsewhere, and when subjected to the expansion caused by the full glare of the sun in summer and a converse effect in winter, will become loose at the joints, and the lead ring will raise up above the hub and destroy the joint. This is always caused by lack of proper support to the line of pipe. Against this, I have tested a cast-iron stack that had been in use for seven years on the south side of a building, where the sun had its full effect, and not even the semblance of a leakage was evident. This was standard pipe, and the joints were well caulked and securely supported every five feet.

The lack of proper support to cast-iron work is the common error amongst plumbers.

In summing up, I am of opinion that if there is any advantage in "Durham Work" apart from the important question of the life of material, it would be in its stability for tall buildings, and where it is necessary to run long horizontal lines between floors, and having fewer joints it has that advantage. It might also be said that it is more flexible and would not be affected by possible settlements as would cast iron.

How Long to Learn Trade.

We know that to master the art of plumbing envolves considerable ability, and it requires from three to five years to overcome the difficulty in learning the science of joint wiping, lead work, etc., and during this time of learning the practical side of things we absorb the theoretical side—a very important part; and it can only properly be obtained by actual experience and direct contact with many of the irregularities which illustrate the right and wrong way of doing things; in this I mean to say that one cannot be learned properly without the other. Now we will say for instance (although I do not consider it so) that Durham Work has a ten per cent. advantage in efficiency over cast-iron, and that it became universally adopted. What would be the ultimate result? The practical side of "Durham Work" can be learned by the average mechanically inclined person in one year, and the question would be—has this so-called plumber sufficient knowledge of the practice of plumbing to install such important work.

The old rule: "A chain is no stronger than its weakest link" is, to my mind, in favor of cast iron. In this I mean to say that the weakest point in "Durham" is no stronger than the weakest point in cast iron, and I am confident in my assertion that for ordinary work, cast iron is more adaptable to the different conditions met with in building construction, and that its life is no myth, and if I should possess enough worldly goods to build a skyscraper, where first cost would be no object; it would surely be a cast iron job.

RUST IN GALVANIZED PIPE.

Writing in the Metal Worker, F. W. Heck, Plumbing Inspector, Chicago, says: "Galvanized pipe has come to stay, or at least for some time to come. Use is made here of a large amount of galvanized iron pipe for water supply for both hot and cold water, in fact instances are becoming rare when lead pipe is used for water service above the ground. It is possibly about 20 years ago that we began using galvanized iron pipe for water service. At the time it was mostly used for hot water piping, owing to the fact that unless the lead pipe was well supported it would sag between the stays making it impossible to drain the pipe, and then again, where the water was heated to a high temperature, both the lead pipe and joints were of short duration. At the present time in all buildings larger than a cottage, and in fact in many of them, galvanized iron pipe is being used for both hot and cold water service. The rules of the Department of Public Works compel the use of lead pipes from street main to 2 ft. beyond the shut-off box at curb, from there on to and within the building it is optional with owner to use either galvanized iron or lead pipe. I will say that as far as accumulations of rust are converned we have very little of that here, and I imagine those conditions exist in all cities and towns obtaining their water supply from the Great Lakes. In regard to inquiry as to whether there is any preparation to remove rust from the interior of piping, I would say that I have never heard of any and that I do not consider the plan of removing rust by acid solution as feasible. The instances where galvanized iron pipe has been removed are mostly owing to imperfections in the galvanizing, or where an undue strain has been placed upon the joints. The question of contraction and expansion should always be borne in mind, and provision for it made, such as leaving sufficient room at the ends of a long run of hot water pipe, where I have found it advisable to make use of a swing joint for making connections with fixtures, more especially where supplies are run concealed in partitions, by simply turning a tee sideways and screwing a street ell into same, which at all times gives the plumber an opportunity of squaring up his openings. This idea saves many a broken thread and takes off all strain from the pipe.

There are cases where care should be taken, such for instance as in running pipe through ashes or cinders and again where pipe is run through red sand; the chemical action of the ground soon destroys the pipe in such places and I would suggest that the pipe be coated with asphalt and rolled and covered with asphalt soaked muslin. I have likewise had instances where I placed a jacket of a larger size pipe over service pipe; then again, where a cold water service pipe is run exposed in a damp basement, the pipe should be covered, thereby preventing the annoyance of a wet streak on the floor caused by the humidity in the air being attracted to the pipe.

The Drake-Avery Co., Ltd., Hamilton, has been incorporatted with a capital of $15,000 to carry on business as plumbers and gas, steam and electric heaters and fitters. Chas S. Avery will look after the technical end of the business.

Plumbers and the Natural Gas Business

An Address by L. B. Mettler, at the Last Convention of the Kansas State Association of Master Plumbers.

I believeve that the plumbers would be doing their customers a signal benefit if they would insist upon having the very best man obtainable to pipe their residences for gas. You should get out of this idea that any two-by-four mechanic picked up on any street corner in the city is perfectly competent to pipe a house for gas. There should be better work done on the gas piping in a residence, if possible, than is done on the hot or cold water plumbing. If the water pipes leak or burst and flood the floor, the damage can be repaired, but if the gas pipes leak or burst in a sleeping room and the occupants are asphyxiated, nothing on earth can be done that will restore them to their loved ones.

There are very few of you gentlemen present but what have from six to eight rubber tubes hanging in your shop that are used for connecting stoves and other gas fixtures. The sale of these is practically prohibited by every gas company in this state, and by every law of good sense. While you will sell one of these hose connections at a profit to yourself, probably at 5 per cent. or 10 per cent., you will knock yourself out of the profit on a man's time that would be required to go to the residence and cut and fit the proper and sensible pipe connections. I am confident that every practical gas man in this state will bear me out in this statement. Then why should you, gentlemen, who would get the benefit of the pipe connection, try to kill your own business?

You should have ordinances passed in the various cities and towns that you come from providing against hose connections. One remarkable thing I notice amongst the plumbers is that many of them will take jobs so cheap that they will have to skimp the job in order to break even. I have known plumbers to take jobs of connecting up an automatic heater where the printed directions specifically state that the gas connections to that heater shall be 1½ inches, connect it up with a ¾-in. pipe and expect that heater to give perfect satisfaction. The plumbers should encourage the proper instalation of any gas appliance in the place of trying to cheapen its instalation.

Good Rules to Follow.

I believe that if the master plumbers would follow out the following simple rules that your customers would not have any trouble whatever:

1. The layout of the pipe system to be arranged in ample and proportionate sizes according to the table of sizes of gas pipes for lamps, gas logs, gas cooking ranges and water heaters, as per the rules of the gas company.

2. All gas pipes to be run to fixture outlets as direct as possible, care being taken to give the pipes the proper fall so it will give proper drainage to the riser lines. No depressions to exist in the running lines. All accumulation of condensation to be avoided. Drip pipes or emptying syphons to be put in wherever needed.

3. Never run a riser in any building less than ¾-inch. Always use care in placing the riser as near the interior of the building as possible so as to be protected against cold.

4. All large risers on distributing lines to be kept exposed wherever possible, or to be arranged so that they can be reached when future repairs or additions become necessary without entailing damage to walls or floors. Smaller gas pipes, when to be concealed, to be rendered accessible by boards secured by brass screws. All side outlets to be fed by risers rather than drop pipes where it is possible to do so.

5. All long horizontal runs of piping to be firmly supported.

Choose Fittings Carefully.

While some of the members here pick any old piece of pipe and run it as gas pipe, they should use the utmost care to procure full weight soft steel or welded wrought iron pipe, and the fittings under two inches should be extra heavy beaded malleable iron. Fittings to be plain, galvanized, or they may be noncorrosive and the best of care taken in making long screw joints. Care being taken to put red and white lead mixed (or preferably, graphite) on the outside of the threads never on the inside of the fittings. This acts merely as a lubricant to screw the joints up tight, and if you had an ordinance passed that every job of gas piping would have to stand a 10-pound test for two hours before gas could be turned on, it would prevent the cheap wagon plumber or hardware dealer going around and doing this class of work, which justly belongs to you, gentlemen, who have practically served your entire lives in learning how to cut a proper thread and make a screw joint tight.

In most of the cities throughout Kansas that are blessed with natural gas, the gas companies have left the sale of appliances to the hardwaremen and the plumbers, whereas in the artificial gas territory the gas companies generally do this kind of work. How long will gas piping and the sale of gas appliances, which makes the consumption of gas possible, be held by the plumbing trade? My observation is that the plumbers will control it just as long as they continue to push the sales.

I believe, gentlemen, that you should control every bit of the gas pipe that is put in a house, and that you should use the best material and labor possible. As long as you do this and continue to push the sale of gas appliances you will continue to do this work. The old "pipe-a-house-for-gas-for-nothing" policy which was in vogue just a few years ago, will in a short time be eliminated, if all of you convince your customers that they ought to have better work done and that they ought to be willing to pay for that kind of work.

NEAT TURN IN REAL ESTATE.

Wm. Linton, Toronto, Ontario sales representative of the Standard Ideal Co., is buying cigars for his friends. He has just turned over a deal in East Toronto suburban property in which Dan Mann, the railroad magnate, passes over cash, etc., totalling nearly into five figures, most of which is clear profit on a purchase of a piece of property a couple of years ago. Mr. Linton's many friends in the plumbing and heating trade will be glad to hear of his success.

BRASS MANUFACTURERS MEET.

The last bi-monthly meeting of the Metal Workers' Club, which includes in its membership a great many of the big brass manufacturers of the United States and Canada, was held at the Iroquois Hotel, Buffalo, on May 19. There was an attendance of between 50 and 60 members. The Canadian trade was represented by Murray Woodbridge, of the General Brass Works, and Fred Somerville, of Somerville, Limited, both of Toronto, the latter being one of the trustees of the organization. The meeting dealt with the question of brass prices, those ruling at present being confirmed. The most important matter decided, however, was the adoption of a new price list on all brass goods, which will come into effect on September 1. This means practically a rearrangement of the list as it now stands from a group price to a single price on all articles, and it is intimated that there will be a general advance on all goods on the list. Instructions were given to immediately put in hand the getting out of a new catalogue, which it is hoped will be ready for consideration at the next meeting of the club, on Aug. 24 and 25, at the Pontchartran, Detroit.

New Westminster's Plumbing Regulations

The Municipal Council of the Corporation of the City of New Westminster, enacts as follows:—

1. Section 19 of the Plumbers and Plumbing Regulation By-law 1906, is hereby repealed and the following substituted therefor:

When the roughing-in work of any plumbing or house drainage has been completed, and before any such work has been covered, or in any way concealed from view, the same must be subjected to either of the following tests; by plugging up all openings and filling with water to the highest point, or by a pressure of air of not less than fifteen (15) lbs per square inch. When the plumber doing said work has made his test and found everything perfectly tight, he shall notify the inspector (in writing) that such work is ready for his inspection. Such tests to include all soil, waste and heat pipes, brass ferrules and soldering nipples in connection with the work. When such work is completed, and all fixtures set, the inspector must be notified that the work is ready for final inspection, and may in his discretion require a final test of smoke or pepperment and no plumbing work shall be used until this inspection has been made, and certificates of approval have been issued to the plumbing contractor, owner or agent.

All sewer connections outside of building and below the surface of the ground shall be inspected by the inspector before being covered, and in case where the public safety might be endangered the same shall be covered with the temporary covering until the same is so inspected. No vitrified sewer connection shall be run within five feet of the building.

2. Section 29 of the said by-law is hereby repealed and the following substituted therefor:

Pipes on extension roofs when within fifteen (15) feet of an opening shall be carried along the roof to the main building, and up and undiminished in size to ten (10) inches above the main roof, and three (3) feet above all openings, there shall be no cowells, ventilators or return bends on the end of the pipe above the roof. All side branches of soil or waste pipe must extend full size through the roof, and must extend on a continuous straight line.

Direct or converging soil pipes shall be, and increase in size as follows: When carrying the discharge of not more than fourteen (14) water closets, or their equivalent, four (4) inches in diameter; from fifteen (15) up to seventy-five (75), six inches in diameter. For the purpose of this requirement, four (4) wash basins or sinks, two (2) urinals, or two (2) slop sinks, two (2) bath tubs, two (2) laundry tubs, two (2) sinks provided the same have waste pipes not to exceed two (2) inches in diameter, shall be considered equal to one water closet.

3. Section 30 of the said by-law is hereby repealed and the following substituted therefor:

No soil pipe shall be less than four (4) inches in diameter. Waste pipes receiving the discharge from eight fixtures shall not be less than three (3) inches in diameter. Those receiving the discharge of from three (3) to seven (7) fixtures shall not be less than two (2) inches in diameter. Those receiving from less than three (3) shall not be less than one and one-half inches in diameter. There shall be cleanouts put in sewer connection at each change of direction of the same, and at the foot of each vertical line of soil pipe. All cleanouts to be put in with Ys and one-eighth ($\frac{1}{8}$) bends, and shall be closed with brass screw covers, and kept accessible when sewer connections are laid beneath the floor.

4. Section 41 of the said by-law is hereby amended by adding the following: All ventilation pipes must have a fall back to the stop, and in all cases before being connected to main vent it must pass one (1) foot above the water line of highest fixture.

5. The said by-law is further amended by adding the following section as section 52a:

Regulations for water services in all buildings.

1. All water pipes when placed under ground shall not be less than thirty (30) inches below the surface of the ground, and all other pipes where so situated as to be exposed to frost shall be properly protected by having a box placed around them filled with sawdust.

2. A stop and waste cock shall be placed where the pipe enters the house, on the inside of basement wall; this stop and waste to be thirty (30) inches below the surface of the ground. A water key shall be made fast to said stop and waste, and extended up through the floor, with handle on same, so that water can be shut off from inside the house. It is not intended that this is necessary when the basement of the house has been excavated to below three (3) feet from top of ground, in which case it will be necessary to place the stop and waste just inside of basement wall.

3. All water pipes inside of building must have a fall to the stop and waste. It will be necessary for the plumber to see that no pockets are left in the pipes, and if so, said pipes must have a drip cock put on so as to drain out all water from the same; this is to apply to both hot and cold water pipes. All pipes must be strapped whenever a bend or branch is made in same.

4. All water pipes when concealed must be placed so that a board can be taken off, and all pipes exposed, said pipes to be run three (3) inches apart, and the hot water underneath.

5. All lawn taps shall have a separate stop and waste cock placed thirty (30) inches below the surface of the ground, also have a wooden box or six (6) inch drain pipe placed over same, with cover on same.

6. All water closet supply pipes where necessary in the opinion of the plumbing inspector must have a drip cock placed on same one and one-half ($1\frac{1}{2}$) inches from the bottom of tank.

7. Cold water supply to range boilers must be from top of boiler. The supply pipe in all cases to have hole in same not more than six (6) inches from top of boiler.

This by-law may be cited as the "Plumbers and Plumbing Regulation By-law, 1906, Amendment By-law, 1909."

PEASE HEATING LINES.

The 1909 catalogue and price list published by the Pease Foundry Co., gives some general information concerning the products of that company. Besides the manufacture of hot air furnaces, the Pease concern also make hot-water heating lines, and a large part of the catalogue under review is devoted to descriptions of these lines. Along with the descriptions are a number of illustrations and sectional views bearing out the words of the letterpress, which latter contains many useful suggestions and much valuable information regarding hot-water heating and its capabilities. A special telegraph code for the convenience of customers dealing with the company and a compact and concise index bring the catalogue to a close.

BRICK AFFINITY.

Two Irishmen stood looking at bricklayers who were working on a building that was being erected when the following conversation was overheard:

Mike—"Pat, kin yez tell me what kapes them bricks together?"

Pat—"Sure, Mike. It's the mortar."

Mike—"Not by a dom sight. That kapes them apart."

Letters from Correspondents on Trade Problems

The Editor Invites Short Letters and Sketches Describing Problems Met With or Original Methods of Doing Plumbing or Heating Work—Name of Writer Required, Though Not Necessarily for Publication.

ARRANGEMENT OF WORKSHOP.

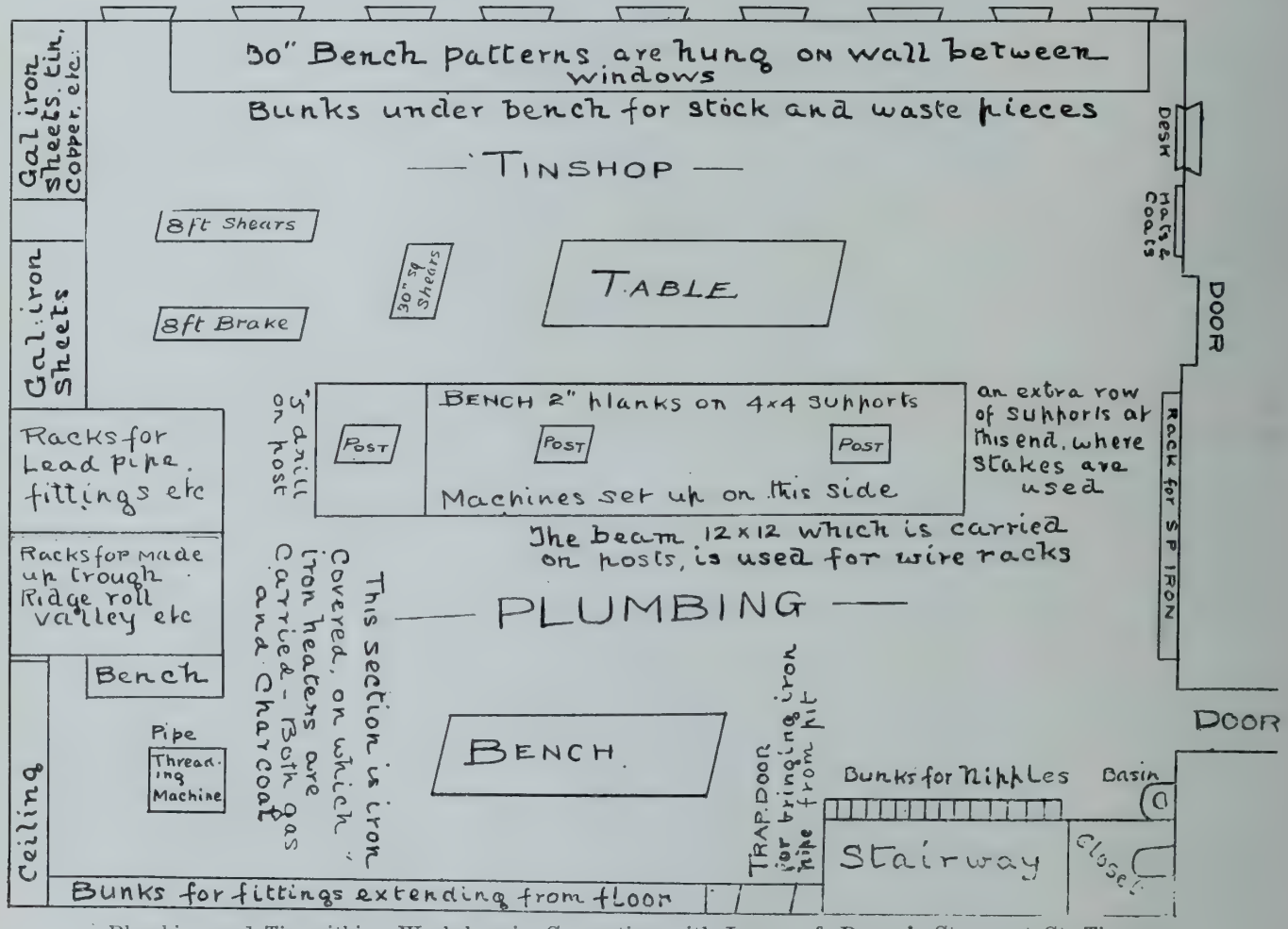
Editor Plumber and Steamfitter,—As I have heard the question discussed a good many times, how an up-to-date tinshop, with plumbing and steamfitting in connection should be arranged, I would ask you for a plan and whatever information you can supply, (concerning the above mentioned) in your next issue of the Plumber and Steamfitter. As it is an every day occurance to see shops that are arranged to some disadvantage, and I think it would be a great benefit to the hardwaremen and sheet metal workers, who are improving and building new establishments, which is in general, in many parts of the West to-day.

SHEET METAL WORKER.

Killarney, Man., May 17.

The accompanying sketch shows the arrangement of the plumbing and tinshop connected with Ingram & Davey's new store at St. Thomas, Ont. The workshop is in a brick building, 42x50 feet in the rear of their store, the ground floor being used as a metal warehouse. The workshop is connected to the store by a bridge over a lane, across which goods raised by the elevator can be trucked. A rope and tackle arrangement is also available to raise or lower bulky stock. The explanation of the arrangement of the workshop is so complete on the sketch that further details are unnecessary.

Readers of Plumber and Steamfitter are invited to send their opinions as to the utility of the arrangement of the workshop shown. Sketches of other shops are also solicited for reproduction in future issues.


30" Bench patterns are hung on wall between windows
Bunks under bench for stock and waste pieces
TINSHOP
Gal iron sheets, tin, Copper, etc.
Gal. iron Sheets
8ft Shears
8ft Brake
30" sq Shears
TABLE
DESK
Hat & Coats
DOOR
Racks for Lead pipe, fittings etc
5' drill on post
POST
POST
POST
BENCH 2" planks on 4x4 supports
Machines set up on this side
an extra row of supports at this end, where stakes are used
Rack for S P IRON
The beam 12x12 which is carried on posts, is used for wire racks
Racks for made up trough Ridge roll valley etc
PLUMBING
Bench
Pipe Threading Machine
This section is iron Covered, on which iron heaters are Carried - Both Gas and Charcoal
BENCH
TRAP DOOR for bringing pipe from pit
DOOR
Bunks for Nipples
Basin
Ceiling
Stairway
Closet
Bunks for fittings extending from floor

Plumbing and Tinsmithing Workshop in Connection with Ingram & Davey's St ore at St. Thomas.

BOAT BUILT BY SARNIA PLUMBER

Editor Plumber and Steamfitter,—The accompanying photo shows a new type of motor boat, which is especially interesting to the trade because it was designed and constructed by one of Sarnia's leading plumbers and steamfitters, F. Goodwin, who has always been an enthusiastic lover of the water. In the model shown Mr. Goodwin has an ideal pleasure craft, safe, seaworthy and speedy, the waterline length of 25 feet 6 inches, and beams of 5 feet 2 inches, with all woodwork in quarter-cut oak and seats trimmed. This not only provides for comfort, but gives an appearance equal to any boat of its size on the river here, and the underwater exhaust entirely eliminates all noise and disagreeable odors so common with the ordinary boat.

The unique features of its construction are in the hull, which is entirely of 18-gauge galvanized steel and built on the hydroplane principle, entirely by hand-work, with only such tools as are found in every well-equipped tinshop. The planes are shaped in the bottom of the hull and each plane (of which there are three) is fed with air from a pipe

leading down from the inner gunwale. The purpose of this idea is to have the boat travel over the water, and so successful has the idea proven that the extreme draft, which is forward, is barely three inches when running at full speed.

Properly speaking, Mr. Goodwin has an auto boat, as everything is controlled from the steersman's seat. The engine needs no cranking, as the auto steering wheel, spark and throttle levers, magnets and battery switch and reverse gear lever are always directly under the steersman's control without moving. The motor, which was manufactured by John Doherty, Sarnia, is a 15 h.p. 2-cylinder, 2-cycle, and develops in this type of boat a mile per hour per horse-power, which gives a speed of 15 miles per hour, and is not exceeded by many boats of this size, not built especially for speed purposes.

That the boat is staunch and strong can well be imagined from the fact that the specially constructed steel stem projects aft where it joins oak sister keelsons, 2 by 4 inches, running the entire length of the boat. These keelsons form the base of the stiffening frames, which are of oak also, 2 by 2 inches, and all bolted solidly through the hull. So strong is this frame that there is no vibration whatever when the motor is running full speed.

Steel Boat Made by a Sarnia Master Plumber.

All seams are riveted and soldered on the inside, and some idea of the thoroughness of the work may be had from the fact that over 4,000 galvanized rivets were used, every one set and finished by hand work.

So successful has the boat proven that Mr. Goodwin has a special speed boat of this type under construction already, and several orders on hand of the type described. The speed boat mentioned is expected to develop close to 25 miles per hour, and is to have a special Doherty 3-cylinder speed motor.

Mr. Goodwin will continue his plumbing and steamfitting business together with the construction of these boats, which are said to be the first steel boats built in Canada, more especially from entirely original plans and designs, and in his own shop, by workmen always in his employ, and without the use of special tools of any kind.

Sarnia, May 20. J. K.

OTTAWA PLUMBERS FAVOR CONVENTION.

Our Ottawa correspondent writes re a Provincial convention of master plumbers :—

"If a meeting of the Ontario Master Plumbers is held in Windsor during the last week of June, several Ottawa master plumbers will attend if conditions are favorable to their getting away. Building is strongly evident now and the majority of the plumbers feel that the possibility of their being able to take a few days at that time is very questionable. However, all agree that such a convention would be a good thing as it would not only promote a fraternal feeling, but would also provide an occasion for the exchange of ideas and discussion of suggestions which would undoubtedly be of value to everyone. An Ottawa plumber suggests that if conventions are held in the winter there would be more likelihood of better attendance as plumbers at that season are not rushed to the same extent as from now to the end of the summer. As regards the establishment of provincial legislation governing the plumbing work in country districts there was an unanimity of opinion in Ottawa. Everyone was emphatic in the endorsation of such a proposal and all agreed that the benefits arising from such enactment would not be alone to the plumbing trade, but to the general welfare of the public health. One master plumber in this connection suggested a clause governing the location of cesspools, closets and privys in respect to wells. He stated that such places should be located according to the formation of the soil or strata at stated distances from sources of water supply and this would materially aid in the prevention of contagious diseases. Others were of opinion that a master plumber should be on the board of health so as to be in a position to intelligently discuss the sanitary methods pursued in the respective cities and towns.

PLUMBING GOODS TO ADVANCE.

Sentiment amongst Toronto plumbing supply men is strongly in favor of an advance in many lines, and particularly in enamelware. It is felt that if master plumbers are willing to accept work at less than cost (at the expense of unpaid supply house bills) the wholesalers and manufacturers are foolish to encourage a continuance of the price cutting by supplying goods at a price too low to provide a margin of profit and cover the many bad debts resulting from the acceptance of jobs costing $130 for labor and material at $110 to $115, with other prices in proportion.

An advance in prices may be announced during the present week.

CAST IRON FITTINGS.

The illustrated catalogue and price list of cast iron fittings for steam gas, oil and water manufactured by the Standard Fitting and Valve Co., Guelph, is a handy booklet of 54 pages, printed on coated paper. The many articles made are illustrated, and the various sizes are enumerated in tabular form. Particular attention is drawn to the "S" cast iron fittings, the tapping of which is straight and of standard size ; time is consequently saved in connecting. The threads of the "S" are full and made to fit the threads on pipe, so that the joints are tight, and the castings are smooth inside and out with an even thickness of metal. The catalogue should prove useful to any plumber.

CANADIANS WILL BE WELCOME.

The editor of The Plumber and Steamfitter had the pleasure of calling upon W. H. Halsey Milwaukee, president of the National Master Plumbers' Association of the United States, while in Milwaukee last week. Mr. Halsey is a very genial gentleman and stated that the entertainment features of the coming National Convention, to be held at Detroit on June 22, 23 and 24, are in the hands of a local committee, of which James Crumley, Detroit, is chairman.

Mr. Halsey was interested in what is being done to get the trade together in Ontario and throughout Canada, and said he felt sure that any members of the Canadian Master Plumbers' Association who attend the convention at Detroit will be given a hearty welcome, and if an effort is made to organize an Ontario Association at Windsor any help in the power of the United States Association will be freely given. D. Craig, Boston, ex-president of the United States National Association, is an old Canadian and will undoubtedly be able to give practical advice to his former countrymen.

Gossip of the Canadian Trade

C. N. Alair, plumber and tinsmith, Welland, is dead.

John Date, plumber, Montreal, has been registered.

H. Riendeau & Co., plumbers, Montreal, have been registered.

The assets of Antoine Nadeau, plumber, Levis, Que., have been sold.

McArdle & Fitzsimmons, plumbers, Hamilton, have dissolved partnership.

J. A. Marier & Cie., plumbers, St. Romuald, Que., have been registered.

A curator has been appointed for the business of C. Lenghan & Fils, Quebec.

Plumbing is picking up rapidly now at Chatham, Ont., and a busy season is anticipated.

Chas. Bell, a Toronto plumber, fell downstairs at his home and died from a broken neck.

A. F. Barber, for a number of years in the electrical business at Vancouver, died there recently.

G. J. Johanson has established a tinsmithing and plumbing business on Fourth Street, North Vancouver.

Plumbing Inspector Thompson, Peterboro, visited Toronto last month to have an artificial leg fitted to his body.

C. N. Alair, for the past six years in the plumbing business at Welland, is dead.

The plumbers of London will run an excursion to Detroit via C.P.R., on Saturday, June 19.

J. A. Crossman, of the Amherst Foundry Co., Amherst, N.S., was a visitor in Toronto last week.

S. Kerr, master plumber, Ingersoll, intends making a holiday trip to the Old Country this summer.

J. A. Crossman, of the Amherst Foundry Co., Amherst, N.B., was a visitor to Toronto last week.

Jno. Boston, of the Jas. Robertson Co., Toronto, visited New York last week looking over new goods.

G. G. Tughon & Co., Toronto, will do the electric wiring in the $100,000 Harris residence being build at that place.

The electric wiring and plumbing in the $8,000 residence being erected by Robt. Maybee at Toronto will be done by Keith & Fitzsimons.

Donovan & Brennan, tinsmiths and plumbers, Halifax sustained $2,000 damage through a fire, which partially burned their building recently.

Liphardt Bros.' tender was accepted by the Berlin water commissioners for the supply of black and galvanized pipe for the present year.

Stephen & Douglas were, at the last meeting of the Chatham water commissioners, awarded the contract for waterworks supplies for the current year.

Geo. M. Watt, of Jas. Watt & Son, plumbers, Chatham, who recently underwent an operation for appendicitis, is now fully recovered.

The Century Electric Co, Montreal, will do the electrical work in two new houses being erected at Westmount for J. T. Fisher.

Eden Smith & Son have awarded the plumbing contract for a $9,000 residence to be erected at that place for E. B. Walker, to T. J, Aggett.

The contract for heating and ventilating the new St. Patrick's ward school, St. Catharines, has been awarded to John Peart, at $3,650.

Barnes & Gibbs, Edmonton, have awarded the plumbing contract for a store building to be erected for I. R. V. Carpenter to the Standard Plumbing Co.

Contracts for the Shakespeare Ward school addition at Stratford have been awarded. The plumbing and heating contract went to McDonald & Henry, at $2,227.

The Pease-Waldon Furnace Co., Winnipeg, are in receipt of orders to supply furnaces to the Cranbrook public school, two schools in Dauphin, and the Minnedosa school.

The F. R. J. MacPherson Co., Peterboro, have secured the contract for wiring and instaling electrical fixtures in the new school which is being built at Bobcaygeon.

The Bathurst-St. Peters Water and Sewerage Co. has been incorporated to supply water and sewerage to Bathurst, N.B. and the village of St. Peters. Capital $20,000.

The Montreal Catholic school commissioners have awarded the plumbing, heating and roofing contract for the new school at Pt. St. Charles to Cadieux & Briand, at $7,111,

Ryan & Burk, the Amherstburg plumbers and pipefitters, have just completed a show room in connection with their tin shop, in the shape of a bath room fitted up with enamelware.

F. E. Jones, electrician, St, John, has moved from the Jardine building to quarters in the Vroom and Arnold building, where he will have more room to display his stock of fixtures.

Maurice O'Connell has installed plumbing, heating and ventilating systems in the Cumberland Apartments, Attwood Apartments, Catholic Lyceum and the Hunt Club at Ottawa.

H. T. Bush, president of the Standard Ideal Co., Port Hope, visited Montreal last week with D. McArthur and W. S. Brock, managers of the Toronto and Winnipeg branches respectively.

Chas. J. Gibson, Toronto, has awarded the plumbing and heating contract for a $10,000 residence for W. McLaughin, to Bennett & Wright. The electric wiring will be done by R. A. L. Gray.

Keith and Fitzsimons, Toronto, have the plumbing contract for the new Avenue Road school in that city. It is worth $1,213. The steam heating contract at $2,100, went to J. R. Seager.

Haney, Quinlan & Robertson, who have the contract for the Winnipeg shops of the Transcontinental Railway, have given the contracts for plumbing and direct and indirect heating to Cotter Bros.

The Standard Ideal Co., Port Hope, are introducing a line of marbleithic laundry tubs, listing at $5 each, stands $1.25 and plug 65 cents. They are announced as sanitary, non-absorbent and unbreakable.

The Municipal Construction Co. has been incorporated under the laws of the Province of British Columbia to manufacture piping and appliances for the supply of water to municipalities and companies. Capital $25,000.

Tenders were received by the Vancouver city council for drinking fountains from the following firms: Hayward & Dodds, Crane & Company, B. C. Hardware Co., Andrew Sheritt, W. Bownass, and the Colbert Plumbing Co.

Charles D. Watson, late of Pease-Waldon Furnace Co., Winnipeg, has returned from the east, where he had been making preparations for the opening, in the near future, of a steam-heating and furnace wholesale house in Winnipeg.

The National Equipment Co., Toronto, with a capital stock of $40,000, to manufacture and deal in plumbing, heating, water and sanitary systems supplies and specialties. The provisional directors are M. J. Quinn, R. J. Cluff, Thos. Southworth, Robt. Paterson and T. A. Rowan.

The Pitner Gasolene Lighting Co., Toronto, has been incorporated, with a capital of $75,000, to manufacture gas and oil machines for the supply and use of light, heat and power. The incorporators are M. Downey, A. Popham, and J. H. Spence, Toronto.

A suspicion that Montreal's water supply is not quite as pure as it might be, has apparently been confirmed by a report presented to the health committee by Dr. H. St. George, a specialist upon such matters, who was appointed some time ago to make an analysis of the water supplied to the citizens.

Ogilvie Bros., Montreal, have been incorporated with a capital of $45,000, to engage in the plumbing and heating business. The incorporators are Peter C. and Samuel Ogilvie, plumbers, and Geo. Duff, bookkeeper, of Montreal.

Alex. F. Crosman, Montreal, has awarded the plumbing and heating con-

tract for the erection of four houses in Westmount for W. L. Chipchase to John A. Gordon, and the electrical work to Electrical Repair & Construction Co.

The plumbing trade at Vancouver is very good at present, and in talking with the men in the trade, little complaint is found. It is a good time of year anyway, but the prospects are particularly good just now. Building continues active, the permits being nearly all for dwelling houses.

The following tenders submitted in connection with the proposed addition to the Stratford Collegiate school have been recommended for acceptance: J. Myers, heating, $1,531; Peter & Sylvester, plumbing, $259; J. Myers, gas piping, $29; Peter & Sylvester, stand pipes $48, and Mr. Whatmough, electric wiring, $104.75.

The contract for the instalation of a central heating plant in the Lindsay court house was awarded to William Hungerford. The contract calls for the instalation of a steam heating system, which will furnish heat for the court house, registry office and the jail. The steam heating will not be furnished for the jail immediately, but all the fittings will be placed and connection made at a later date.

J. Peck, of New Westminster, has been requested by the Victoria school board to go to that city and look over the plans of the various heating systems which have been submitted for the new Central Park school. He will be asked to report on a plan embodying the best features of the several plans now before the board. The instalation of the heating system will call for an expenditure of from $6,000 to $7,000, in addition to the cost of the school, which is placed at $64,000.

The Brantford Golf Club recommend that the tender of the Goold, Shapley & Muir Co., for the instalation of a plant to water the green be accepted. The Goold people agree to erect a 75-foot steel tower and a 100-barrel tank and guarantee to pump water from the river, some one hundred feet below, so as to fill this tank every three hours if necessary. They will instal a system of one and one-half inch galvanized pipe to all the main greens and one and one-quarter inch pipes to the others. Their tender for the work, which is of quite an extensive nature, was $1,200.

Mitchell Bros., the new Chatham plumbing firm, are making considerable use of newspaper "locals" in their campaign for public patronage. They also put on an attractive display at their shop, the hanging electric lights with their many different styles of shades making an exceptionally attractive night effect. The firm has secured one big contract, for the instaling of the steam heating system, electric wiring and plumbing in the addition now being made to the Ursuline Convent there. A contract has also been secured for hot water heating, plumbing and gas fitting in Perry Dolsen's new brick residence in Raleigh.

Frederick Milo, Kingston's water works plumber, applied for an increase of $200. His present salary is $800. He was granted an increase of $100. Mr. Milo has been in the employ of the Kingston waterworks 21 years.

Robt. Ross, Leamington, who recently secured the contract for looking after the plumbing department of D. H. McKay, Kingsville, will also continue business in Leamington, having shops in both towns.

The contract of the plumbing and electric wiring of the new Peterboro Armouries has been recently completed by F. R. J. MacPherson & Co., and has been inspected. The result has been most satisfactory and complimentary from the contractors' standpoint. The electrical contract is stated to be the biggest that has ever been let in Peterboro. The conduit system was used throughout.

There ought to be a big contingent of master plumbers from Chatham attend the proposed convention of Ontario Master Plumbers, at Windsor, the last week in June, at the same time as the U. S. National Master Plumbers' Association hold their convention in Detroit. Interrogated as to their willingness to attend, several readily assented, should the suggested convention be called.

The master plumbers of Brantford express themselves as being heartily in favor of the holding of a convention of the Ontario master plumbers at Windsor, while the U. S. master plumbers meet at Detroit, and at least four have expressed their intention of being present, should one be called. They are also heartily in favor of uniform legislation covering the entire province, instead of the present method, or, in many instances, entire lack of proper inspection.

As a result of a fall from a street car on May 29, John Richardson, a Toronto plumber, will probably lose his life. Richardson fell from the rear platform of a King street car. He had been smoking, and his cigar slipped from his fingers and fell to the step of the car. As Richardson stooped over to pick it up the car jolted and the unfortunate man, losing his balance, toppled over, striking the pavement with terrific force. The car was brought to a standstill and the injured man was carried over to the lawn opposite. Dr. James Bach, who was a passenger on the car, attended to him until the arrival of the police ambulance, in which he was taken to the hospital.

Superintendent of Public Buildings Evans, Providence, R.I., is considering the establishing of a municipal plumbing department connected with his department with a view to saving the city in the expense of plumbing repairs of city buildings. His recent report shows that the city spent for plumbing and plumbers' supplies during the past six months $5,718.76, distributed among sixteen master plumbers of the city. Plumbers in the U. S. are awakening to the necessity of preventing, if possible, the municipalities going into the plumbing business, and they point out the evil results of municipal trading in Great Britain. Why not a civic grocery store also?

Victoria is at last making a move in the direction of having public lavatories put in, thus coming abreast of eastern and Old Country cities, which have for a long time been up-to-date in the matter of public conveniences. Alderman Humber will move at a coming meeting of the city council that plans and specifications be prepared for the construction of five lavatories and sites secured by a committee of the mayor and three aldermen. The backwardness of the city in this respect has frequently been commented upon by visitors and several sugestions have been made to the city council and letters written to the press on the subject. The latest was made by John Wilson, he submitting plans of an up-to-date, thoroughly hygienic structure and estimated that a revenue could be obtained which would pay for maintenance and all possible charges.

The Plumbers' and Engineers' Supply Co. is the name of a company recently incorporated under an Ontario charter, whose members are all residents of Pt. Arthur and Ft. William. The company is incorporated for the sale and manufacture of plumbers' and engineers' supplies and the head offices are situated in Ft. William. At the inaugural meeting of the company the following officers were elected: A. Cameron, president; O. J. Deegan, vice-president; J. J. Culliton, treasurer; John Marshall, secretary, and these officers with Andrew C. Waltz form the board of directors. It is the intention of the company to carry all requirements for the trades specified in their title, and to retail them to local men and also through the west, and as the demand increases they can install machinery and manufacture them. The company is capitalized at $200,000, of which $33,000 is already subscribed. The company will not go into the contracting business, but will confine their operations to the supply of the trade.

Canada Experiencing a Building Boom

Steady Increases Reported From all Parts of the Dominion—Several Cities Show Increases of Over 100 Per Cent.—This Year Likely to Surpass all Previous Records.

As the season advances evidence increases of the vast volume of building projected in Canada during 1909. The late Spring and rainy weather in the first part of May delayed much work and held back sales of many classes of goods, but nothwithstanding this architects and contractors are working overtime on plans for new buildings and civic officials are issuing permits amounting to figures far ahead of 1908 and in many cases surpassing the big totals of 1906 and 1907. As building authorities have said, it seems no longer a question as to whether Canada will surpass all previous records, but more of a matter of speculation as to how great the gain will actually be on the year's work.

Complete returns for the first five months of 1909 are not yet obtainable as the building departments in many places are considerably behind in their work, but those sending figures show that April and May have been big months and if the pace is kept up plumbing supply houses will require large stocks to finish the buildings to be constructed this season.

Toronto's Building Boom.

Toronto's record for new buildings in 1908 was $11,795,436, the first four months having a total of $2,740,858. Against this the figures for the four months up to May 1, 1909, show a total of $4,940, 298, an increase of $2,200,000, or almost 100 per cent. At this rate the permits for 1909 may reach the remarkable figure of $20,000,000 if the pace is kept up. In March Montreal had also shown an increase of 90 per cent. over last year with permits for $376,275, while Winnipeg, with $851,700 in March, showed an increase over the same month in 1908 of 646 per cent. Halifax in March had an increase of 273 per cent., Fort William, 269 per cent., Edmonton 232 per cent., and Calgary 125 per cent.

Ontario cities show great activity with estimates for 1909 amounting to $2,000,00 in Ottawa, where the greatest building boom in the city's history seems to be on, $1 500,000 in Hamilton, $1 000,000 in London, $300,000 in Kingston, $250,000 at Galt, $100,000 at Chatham and so on in scores of other towns and cities.

Winnipeg and the West.

Winnipeg's building permits have already passed the $2,000,000 mark and, including the new million dollar union depot, it is estimated that the end of 1909 will find the year's total very close to $10,000,000. Included in this will be apartment houses costing $200,000 and $100,000;; twelve-storey office building school, costing $80,000; bank $250,000 and many other large structures. Edmonton will have about $2,000,000 of public and other buildings erected this year, the bulk of this work being on the new Parliament buildings. Saskatoon is to have $500,00 spent on University buildings and as much more on other structures. Calgary, too, is forging to the front with a large number of wholesale houses and factories. Lethbridge issued to the beginning of April permits valued at $195,485. Kenora will witness building operations for the season aggregating $175,000. Among the new buildings will be a tourist hotel, $75,000; court house, $40,000; goal $10,000; Oddfellows' block, $15,000. The Lake of the Woods Yacht Club will erect a club house, and a summer hotel at Keewatin Beach, will cost $30,000. Minnedosa will have new buildings aggregating $100,000. This includes a new court house at $40,000, a public school at $20,000, several business structures and at least ten new residences. Macleod will see at least $500,000 spent on buildings during the summer. The Bank of Commerce is putting up a block to cost $75,000. Brandon is to have this year a new court house at a cost of $100,000. The new Methodist church will cost $15 000. Permits have been taken out for other business buildings totalling $60,000 and for residences totalling $50,000. Yorkton is to have this year a new post office at $75,000; an addition to the monastery of the Redemption Fathers, $35,000; a Presbyterian church, $16,000; two brick blocks, $10,000 each, and sixteen new residences. Several other places will also be the scene of building operations of considerable importance. Manitou will see spent in this way $100,000; Portage la Prairie, $50,00; Pincher Creek, $150,000; Maple Creek, $30 000; Carberry, $60,000; Gimli, $25,000; Morris, $20,000; Oak River, $20,000; Gretna, $8,000; Cranbrook $200,000.

General Building Notes.

Winnipeg Odd Fellows will erect a $35,000 temple.

D. H. Ramsay, Lethbridge, will erect a $3,800 residence.

C. B. Sergeantson, Victoria will build a $3,000 dwelling.

W. J. Craig will erect at Toronto a $35,000 warehouse.

W. Tatley, Montreal, will build four houses to cost $14,000.

R. P. McLennan is building a $25,000 residence at Vancouver.

H. L. Stevens will erect an $8,000 mission house at Toronto.

J. G. Nicholson is to build an addition to his warehouse at Saskatoon.

Erskine Smith will erect a $15,000 apartment house at Toronto.

The Bank of Montreal's new branch at Toronto will cost $45,000.

B. Russel, Vancouver, will erect a frame dwelling at a cost of $4,000.

Matt Loney has let the contract for a block of cement houses at Port Stanley.

The Masons of Victoria, are to put a large addition to and entirely reconstruct their present temple.

C. Bleicher, Hamilton, has a permit for brick addition to 37 Leeming street. Cost $2,000.

The Agnew Bros. Hardware Co. Saskatoon, have called for tenders on the three-storey block which they will erect this season.

The Victoria Y.M.C.A. have succeeded in raising $100,000 in two weeks, and building is to commence as soon as a site can be secured.

The plans for the new C.N.R. depot to be erected at Saskatoon, have arrived and it is probable that the tender for erecting the building will be let in a few days.

Plans have been prepared by Architect F. Neil Brodie, for the new Bank of New Brunswick building to be erected at St. John. Tenders will be called for very shortly.

Recent building permits at Montreal include: H. Corbeil, ten dwellings, $9,000; A. Delorme house, $4,000; T. Beaupre, five dwellings, $3,500; Catholic School Commissioners school house, $34,000; J. B. Hudson, two houses, $4,000; Mary Thibedeau, six dwellings, $6,000.

Two more business blocks are to be erected at Victoria. Finch & Finch will build a large four-storey block. The other is in the same block and will be about the same size and height and will give a substantial appearance to that section, which is rapidly coming to the front as a retail centre.

The building trade is very brisk at Edmonton, work having started on the following buildings: J. Kenwoods stores and offices, $20,000; J. McKay Dixon's stores and offices, $10,000; Lewis Eiler's stores and offices, $30,000; Mrs. Looby's stores and offices, $15 000; S. Nankin's stores and offices, $9,200; Twin City Mfg. Co., factory, $15,000; Sisters Companions of Jesus, Convent, $25,000; J. Whitla's residence, $5,000; F. Adams, residence, $5,500, and a large number of smaller buildings.

The Northern Canada Supply Co. is building warehouses at Cobalt.

A. B. Brown, Toronto, will build three dwellings to cost $11,000.

The Imperial Bank will build this year a branch at Prince Albert.

An addition will be built to the provincial asylum at Selkirk, Man.

Jas. H. and Jno. L. McGuire will build a $250,000 hotel at Ottawa.

A new Masonic Temple will be erected at Ottawa, Ont., at a cost of $50,000.

F. L. Beecroft, Toronto, will build two pairs of dwellings to cost $10,000.

Henry Gaffney, Toronto, will build six pairs of dwellings at a cost of $28,000.

Geo. Lighthall will build a big apartment house at Montreal, to cost $75,000.

Three attached dwellings to cost $12,000 will be built by Albert Mass, Toronto.

The Protestant Orphans' Home, Ottawa, will be renovated at a cost of $2,000.

Two pairs of dwellings to cost 910,000 will be built by E. G. Switzer, Toronto.

At Toronto R. Mackey will build three pair of dwelling houses to cost $12,000.

Three pairs of dwellings to cost $12,000 will be erected at Toronto by H. J. Clarkson.

A. H. Bartlett, Brandon, is getting plans for a big apartment building to cost $60,000.

The Ruthenian Greek Church, Winnipeg, will erect a parish dwelling at a cost of $5,000.

A new power house to cost $45,000 will be build on McGill University grounds, Montreal.

Victoria's building permits for April were $50,000 more than in the same month a year ago.

Chas. Tellean, Vancouver, B.C., will build a $25,000 hotel on Vancouver Island at Campbell river.

Three attached stores and dwellings to cost $12,000 will be built at Toronto by McKinney & Johnson.

Tenders are being received by W. T. Williams for the new Merchants Bank building at Medicine Hat.

The Bank of British America has purchased a site on which to build a banking office at Oak River, Man.

The James Bay Athletic Assn. will probably commence the construction of a new $75,000 building at Victoria.

Chaffey & Verhoeven, Winnipeg, have been granted a permit for a three storey office building. Estimated cost $7,000.

The Standard Bank will build an eight storey office building at Toronto. Work will begin in the course of a month.

Bannerman & Horne, Victoria, will erect a $20,000 block. Construction will be commenced as soon as plans are completed.

The contract for the alterations and additions to the National Bank at Montreal has been awarded to J. B. Pauze & Co. at $126,498.

It is stated that Montreal capitalists are interested in a project to rebuild the Iroquois House, at St. Hilaire, Que., at a cost of $200,000.

The following building permits were recently issued at Winnipeg : A. C. Galbraith two houses, $4,000 ; E. Kuhn, house, $1,000 ; A. W. Cassidy, house, $1,000.

Chas. Mills, Hamilton, has been granted a permit for the erection of a three storey brick building on Jackson street for the Y. W. C. A. Estimated cost $36,000.

Oldfield, Kirby & Gardner, Winnipeg, will build a two-storey office on the site between the post office and the Northern Crown Bank. The total cost of the building will be approximately $50,000.

Recent building permits at Vancouver are : J. G. Rauch, $1,200 ; Fairview Manufacturing Company, $400 ; Thomas McGivern, $250 ; Swedish Lutheran church, $1,500 ; Mrs. R. Copeland, $200; T. Kornega, $4,000.

It is reported that the Northern Crown Bank will erect a new office in Red Deer. The Canadian Bank of Commerce has also purchased lots where it is expected a large and up-to-date building will soon be reared.

Smith Bros. & Wilson, Regina, have the contract to erect a stone building for E. C. Corbeau. Stoney & Van Egmond, have awarded contracts to W. M. Lambert for Geo. Peacock's residence, and the warehouse for Peart Bros. Hardware Co. to McGregor & Black.

Recent building permits at Ottawa are : N. F. Ballantyne, $5,500 ; A. W. Grant, dwelling, $3,300 ; Mrs. C. Stewart, dwelling, $4,500 ; C. H. Putnam, dwelling, $2,000 ; Wm. Stuart, additions and alterations to buildings, $3,500 ; Wm. Coats, apartment, $2,500 ; Daniel Douras, dwelling, $2,500 ; George Gormley, dwelling, $4,000.

Among the new buildings to be erected at Calgary are the following : Theatre to cost $20,000 ; three-storey apartment block, $50,000 ; $20,000 hotel in East Calgary ; four additional storeys to Winnipeg Paint and Glass Co.'s block ; International Harvester Co.'s warehouse and office building, to cost $9,000, and a grain exchange.

Peterboro's building permits continues to come in encouragingly. The following were taken out during the past week : Jos. Gray, dwelling, $1,800 ; Jos. Gray, dwelling, $1,800 ; Geo. Quinn, dwelling, $1,700 ; W. H. Baker, dwelling, $3,000 ; Jas. E. McIlmoyle, $2,000 ; W. J. Henry, dwelling, $1,000; Anthony Taylor, dwelling, $1,250 ; Alex. Choninard, dwelling, $800.

Public Buildings.

A new public school will be built at Merlin Ont.

The C.N.R. will build a modern depot at Winnipeg.

A new Presbyterian church is being erected at Hespler.

Yonge Street Methodists, Toronto, will erect a new church.

A $4,800 Methodist church is being erected at New Toronto.

A new Methodist church is proposed to be built at Ottawa East.

A new Roman Catholic church will be erected at Westboro, Ont.

A $20,000 addition will be built to the Claresholm, Alta., school.

It is rumored that the C.P.R. will build a large depot at Regina.

A $100 000 opera house is said to be projected for Fort William, Ont.

The Methodist church at Fort William is to be remodeled and enlarged.

A fire hall with city offices adjoining will shortly be erected at Govan, Sask.

L. R. Fairn, of Aylesford, N.S., is preparing plans for a new school at Springhill, N.S.

A new wing will be added to the registry office at St. Thomas, at an estimated cost of $6,600.

A by-law will be submitted to the Revelstoke ratepayers asking for $40,000 for school purposes.

The Saskatoon Concrete Co. have the contract for the erection of a schoolhouse at Lake Patience.

The congregation of Holy Trinity Church, Welland, are considering the erection of a new church.

The Dominion Government has completed the purchase of post office and armory sites at Strathcona.

Fire Chief Thompson has reported that four new fire halls are needed at Toronto at a cost of $120,000.

Court houses are to be built by the province at Claresholm, Medicine Hat and Fort Saskatchewan, Alta.

The Vancouver Exhibition Association will take tenders for the erection of the main building at Hastings Park.

Competitive sketch plans are invited for a Collegiate Institute building to be erected in Saskatoon to cost $90,000.

At Richibucto, N.B.,the contract for the new school building has been awarded to Mr. Lutz, of Sussex, N.B., at $7,000.

The building of the new Presbyterian church at Shoal Lake, Man., was awarded to E. R. Snider, whose figure of $7,750 was the lowest.

By-laws to spend $24,000 to complete the collegiate institute, and $17,000 for new agricultural buildings at the fair grounds were passed recently at Moose Jaw.

Work is to be commenced at once on the new addition to St. Mary's Academy, Winnipeg. The building will be four storeys high, of brick construction and will cost $80,000.

The Melville municipal council has passed the following by-laws: Site for fire hall and for erection of building thereon, $2,050; police barracks, $550; water supply for fire purposes, $1,500.

Municipal Undertakings.

Owen Sound ratepayers carried the waterworks by-law.

Barton township, Ont., citizens ask for a sewerage system.

The construction of a number of sewers is contemplated at Belleville.

The extensions to Hull's waterworks system are estimated to cost $18,000.

Moose Jaw asks tenders for laying water and sewer mains.

Tenders are asked by St. Thomas for building a sewage disposal plant.

London may adopt the artesian well system for getting its drinking water.

Work is to be started at once on the $50,000 sewerage system at Macleod, Alta.

Work is to be started at once on the $50,000 sewerage system at McLeod, Alta.

Tenders will be received up to June 2, for the supply of waterpipe for Vancouver.

Moose Jaw has passed a by-law to spend $24,000 on waterworks and sewerage extensions.

Peterborough water commissioners are calling for tenders for waterworks plant for that city.

Olds, Alta., ratepayers will vote on a by-law on June 15 to issue $6,000 fire protection debentures.

Latchford, Ont., ratepayers will vote on Aug. 15 on a by-law to issue $4,000 fire protection debentures.

Niagara Falls, Ont., ratepayers will vote on May 27 to issue $1,800 debentures for sewer construction.

Wetaskiwin, Sask., ratepayers will vote on a by-law on May 27 to raise $7,000 for fire protection purposes.

Battleford, Sask., business men are asking for a fire protection system. Such a one would cost about $30,000.

Oak Bay ratepayers will vote June 15 on a by-law to raise $30,000 for the installation of a waterworks system.

Representatives of Ottawa, Hull and Aylmer met recently to discuss the installation of septic tanks at Aylmer.

Gravenhurst ratepayers will probably be asked to vote on a by-law to raise $20,000 for a new waterworks system.

Carman ratepayers will vote on a by-law to raise $25,000 for the completion of the town waterworks system.

The Ontario Railway and Municipal Board has validated Cobalt's by-law to raise $75,000 for sewerage and waterworks system.

There are indications that the construction of the proposed trunk sewer at Brandon will be commenced this season.

Niagara Falls, Ont., ratepayers have approved a by-law to raise $1,800 for the construction of a low level sewer on Main Street.

City Engineer Antonisen of Port Arthur is preparing estimates for proposed extensions to the waterworks and sewerage plants.

James Heatley's tender for the construction of extensions to the Brampton water works system was accepted, it being the lowest.

Fernie, B.C., ratepayers have approved a by-law to raise $100,000 for the purchase of the present waterworks system and extensions thereto.

The Moncton, N.B., Board of Works, is considering several water and sewer extensions, for which tenders will probably be called in the near future.

The contract of Carriere & Wilson for the extension of the Hull waterworks to cost about $7,000, was confirmed at a recent meeting of the city council.

Engineer Childs, of Calgary, Alta., has completed his report on proposed gravity water system and estimates the cost at $290,090, exclusive of reservoir.

North Battleford, Sask., ratepayers will vote on a by-law on May 25 to raise $100,000 to install waterworks, sewerage and electric lighting systems.

Tenders will be received until May 24 for the construction at Yorkton, Sask., of sewers as follows :—2,000 feet of 12-inch, and 15,000 feet of 8-inch, with all necessary appurtenances.

The by-law to raise $10,000 for water extensions at Kamloops received its preliminary readings. On motion of Ald. Brown the amount was increased to $15,000.

A trunk sewer will be built on Pacific Avenue, Eighteenth Street and Rosser Avenue, Brandon. Work will commence on it at once and when it is completed $47,000 will have been expended.

The Montreal roads committee have sent in requisitions for $2,500,000 for public work, to be completed this summer. Included in this amount are sewers, $133,000 ; pumping plant, $55,000.

Aylmer is willing to pay one-third of the cost for the installation of septic tanks in connection with her sewerage system, provided that Ottawa and Hull bear the remaining two-thirds of the amount.

The by-law to raise $74,000 to install a water and light system will be submitted to the ratepayers of Claresholm, Alta., shortly. If the by-law carries, the town will install a gravity water system.

A new waterworks system to supply Prince Rupert will shortly be installed. Negotiations at present are proceeding between the provincial government and the G. T. P. with regard to the financial arrangements.

At a recent meeting of the Moose Jaw council, a by-law was introduced to raise $40,000 for the construction of a reservoir at Snowy Springs, and for improving the means of bringing the water to the city.

The Guelph sewage committee at their last meeting prepared a report recommending that they be given power to start right ahead with the work of laying the sewerage beds at an estimated cost of $25,000.

The successful tenderers in connection with Saskatoon's water mains and sewer pipe and their tenders are : Section 1, Harry Welch, Saskatoon, $13,725 ; Section 2, Reginald Boulton, Prince Albert, $17,900 ; Section 3, William Cook, Saskatoon, $9,756.25.

At a recent meeting of the Stellarton, N.S., town council the chairman of the water commissioners reported on the proposed extension of the water service to Lourdes and the Allen Shafts colliery. It will require 11,121 feet of pipe, and the total estimated cost of the work is $11,826.05.

Yorkton is making preparations to supply the Canadian Pacific Railway with twenty thousand gallons of water a day. On account of the good work done by the waterworks system at a recent fire, inquiries have been received from other towns wishing to make an installation, the latest being from Neepawa, Man.

The Berlin Light Commission opened tenders for wrought and cast iron pipe for new gas mains and extensions. Seven tenders were received for 4-inch pipe and that of P. Hymmen & Co., Berlin, was the lowest, $27.24 2-5 per 100 feet. The tenders ran up to $28.25 per 100 feet. There were three tenders for the six-inch cast iron pipe, and the lowest was $48 per 100 feet. The highest tender was $50.25. The successful tenderer was the Gartshore Thompson Company, Hamilton.

The following tenders for material required in the installation of the high pressure system at Victoria were accepted : Fine wire, Hawkins & Hayward, 18½ cents per lb.; stempipe line, Marine Iron Works Co., $350 ; water suction connections and valves, Marine Iron Works Co., $450 ; condensing equipment, tender not awarded though the apparatus offered by the Hutchinson Bros. Company, the lowest tenderers, at $1,750, is recommended.

The contract for supplying Kamloops with water pipe has been awarded to an English firm, the agents of whom are the Burton Saw Co., Vancouver. The shipment will be here in September and the work of extending mains and taking a water supply across Peterson Creek will then be rushed to completion. There were many tenderers for the pipe, the price of the English firm being $45.10 per ton of 2240 pounds f.o.b., Kamloops. This was considerably below the others and it was estimated that a saving of $500 would be effected. The contracts for the hydrants, valves and boxes will be awarded later.

Work has again been commenced on Montreal's big new waterworks conduit, which runs from Lachine to Montreal. The undertaking was stopped during the winter months, but it is now expected that it will be completed by July. The conduit is to supply the city with an additional fifty million gallons of water per day. It is of concrete, and, being far underground the water will not be contaminated by dust and drainage, to which the present aqueduct is subjected. The cost of the new conduit will be $680,000. As soon as the work is completed the Water Committee will call for tenders for the laying of the "intake" pipe at Lachine, away out into the middle of the St. Lawrence.

Contracts for the construction of the Toronto filtration plant on the Island and for equipment for the filtration plant were awarded by the Board of Control. The contracts totalled $635,089, or $114,911 less than the Engineer's estimate, $750,000. The contract for the construction of the plant was given to Dill, Russell & Chambers of Toronto, at $568,128.60. In the case of the electrically-driven stage pumps there were four tenders lower than that of Allis-Chalmers-Bullock Co., Montreal, but Engineers Rust and Hazen reported in favor of the Allis Co. because its guarantee of efficiency was the highest. The Canada Foundry Co., which was given three of the contracts, was a little higher than a Glasgow firm, but the local firm was preferred because of being local. There were five tenders for the construction of the plant.

Charles Robertson, secretary of the Jas. Robertson Co., Montreal, has been for some time confined to his house by illness.

PLUMBING AND HEATING MARKETS

MONTREAL.

May 22.—Although the wet weather has tended to keep back the building season a good volume of trade is being done by the supply houses. It is true that there is no rush observable, but orders are steadily swinging in, and the aggregate bulk is mounting up to good proportions. As one jobber observed, "We have to hustle after the business, but we are doing much better than we did this time last year." And this about sums up the situation all the way round.

Soil pipe, lead pipe, and solder continue to be in very good demand. Buying is still on the conservative side. Few plumbers are purchasing more than they really need, and stocks, therefore, are practically nil. This gives a strength to the situation which is not apparent when the volume of trade is alone considered.

Work continues to be somewhat unevenly distributed among the plumbers. Some have more work than they can handle, others are in the quiet side. Altogether there is a fair number of jobs going, although the rush season has not yet started. Jobbing work has been good, and fair prices obtained, although things could be much better in this respect.

SOIL PIPE—Soil pipe is moving out in improving bulk. Not only is the city trade good, but other points in the province, like Three Rivers, are heavy buyers. Large consignments are regularly leaving by boats. The market is firm with a bright tone. There are no changes in discounts, and we quote: Light, 3 to 6 in., 60 off; medium to heavy, 2 to 6 in., 70 off; 8 in., heavy, 40 off.

LEAD PIPE—Lead pipe is in very active demand. Supply houses are satisfied with the trade doing, and say that prospects appear very favorable. Stocks in users' hands are light. The market is unchanged, and we quote: Pipe and waste at 27½ off; traps and bends at 50; calking lead at 5c per pound.

SOLDER—A good movement characterizes solder, and a fair amount of stocking-up seems to be in progress. The wet weather has tried many roofs and with plenty of repair work there has been a strong demand for solder. There are no changes in prices, and we quote: 19½c for half-and-half and 18½c for wiping.

IRON PIPE—Satisfactory orders are being booked for iron pipe. The demand is not only more active but for heavier bulk, and prospects look exceedingly healthy. No changes in prices are announced, and we quote: Discounts, ¾-in. to 4-in., black, 72½ off; galvanized, 62½ off.

RADIATORS AND BOILERS—There is a steady demand for boilers and radiators. Some good bookings have been made, while fair lots are going out on immediate delivery. Supplies are in good shape. We continue to quote radiators and boilers at 60 off; steam fittings about 70.

BRASS GOODS—There is an improving demand for brass goods, and while there is a fluctuating tone to the cheaper grades the better class lines are firm. We continue to quote: Compression work, high grade, 60 and 10 off; standard, 70; fuller, 75 off.

METALS—Although the tone of the metal markets has not been so bright as it was owing to broken weather and the sagging tendency of the primary markets, there has been no change in quotations. We quote: Ingot copper, 1c; ingot tin, 32½c; lead, $3.65; pig iron, Middlesboro No. 3. $16 50 to $16.75; Summerlee, $18.75. Heavy scrap red brass is 10c; light copper 10c; heavy lead, 2¾c.

TORONTO,

May 29.—The plumbing supply houses report business as back to normal, and in a couple of instances the report is to the effect that "business is splendid." Booking is still being done in heating lines with few calls for present delivery, but in the case of enamelware, the goods are wanted just as soon as they can be had. The season is expected to be particularly good in this latter department, more especially in the cities and larger towns.

Prices on roll rim and flat rim sinks have gone back to their old figure; but beyond this there has been no change in price. Iron pipe is said to be coming in freely from the U.S., at a supposedly cut figure. The latest report comes from the London district, where large quantities are said to have been offered during May. Pipe of all kinds is in demand just now, a great deal of new and roughing-in work being done. Brass goods are improving.

IRON PIPE AND FITTINGS—Some splendid business has been done locally in these lines, and country demand, too, has been more than fair. Prices continue at the old market quotations, though in London and in some other Western Ontario points cut prices are said to be asked for some quantities of iron pipe brought in from across the border. The market quotations are 1-in. black, $4.54, and 1-in. galvanized, $6.19. Malleable and cast iron fittings are also active. The former is at 40, and the latter at 70 per cent.

SOIL PIPE—The same condition prevails in regard to this line as has ruled in iron pipe. Demand is very good and orders are increasing slightly from week to week. Quotations are unchanged. Medium and extra heavy pipe and fittings up to 6-in. are at 70 per cent.; light pipe is 60; and fittings 70 per cent.

LEAD PIPE—Another fine seller is lead pipe. June is expected to see a splendid demand. During the past fortnight the trading has been especially active. Pipe and waste are 27½ per cent. off; traps and bends are 50 per cent., and calking lead is easier at 4½c a pound.

SOLDER—Wiping 18½c, and half-and-half 19c, continue to be the local quotations, and the market is firm. Business has been excellent for both grades and the turnover has brought forward some fresh new stock.

ENAMELWARE—If inquiry added to passing trade is any criterion of the present state of the plumbing situation then the answer is that it is over the hill and improving rapidly. Baths and sinks have been called for in orders of goodly proportions, some of them for immediate delivery, and more for shipment in the early summer. The market is firmer. Roll rim and flat rim sinks have gone back to their old price, $7.85, an advance of 25 cents above the price ruling for the past several months.

HEATING LINES—Delivery is rather slow just at present, though booking is keeping up to the pace set earlier in the season. In six months' time there should be a good movement forward in boilers and radiators.

BRASS GOODS—Steadily improving demand exists for brass lines, and brass-finishing work is being more and more turned out of the factories. The prices are the same as those which have been ruling for a season past.

BETTER SANITARY CONDITIONS.

An order has been issued by the Board of Railway Commissioners to the railways to observe sanitary conditions upon their cars and in their stations. As a result of the applications of the Montreal Board of Trade, every railway company subject to the legislative authority of the Parliament of Canada is ordered:

To keep clean and well ventilated all waiting rooms, closets, and to disinfect them. Employes are to give monthly reports on condition of all such; passenger cars are to be cleaned and ventilated in the same way.

To adopt by-laws preventing spitting on cars, closets, platforms, stations, etc., except in receptacles provided.

To fumigate all stations or cars where infected persons have been.

To fumigate all sleeping cars at least every 30 days.

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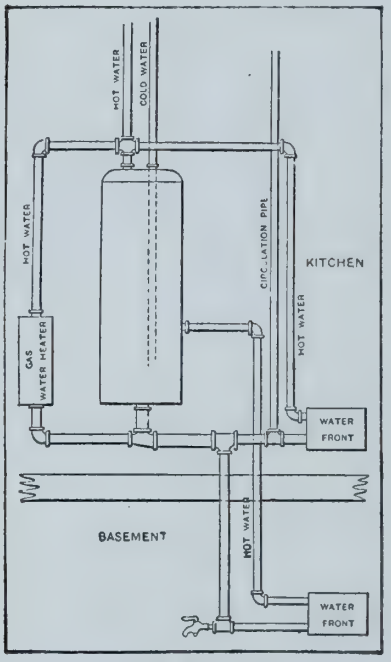

Detail of Connections.

connected into the hot water service pipe as shown in the illustration. The arrangement of piping thus brings the circulation pipe so that it can deliver water to either of the water fronts.

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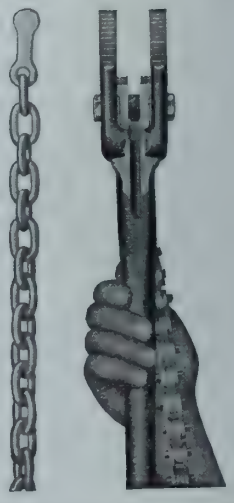

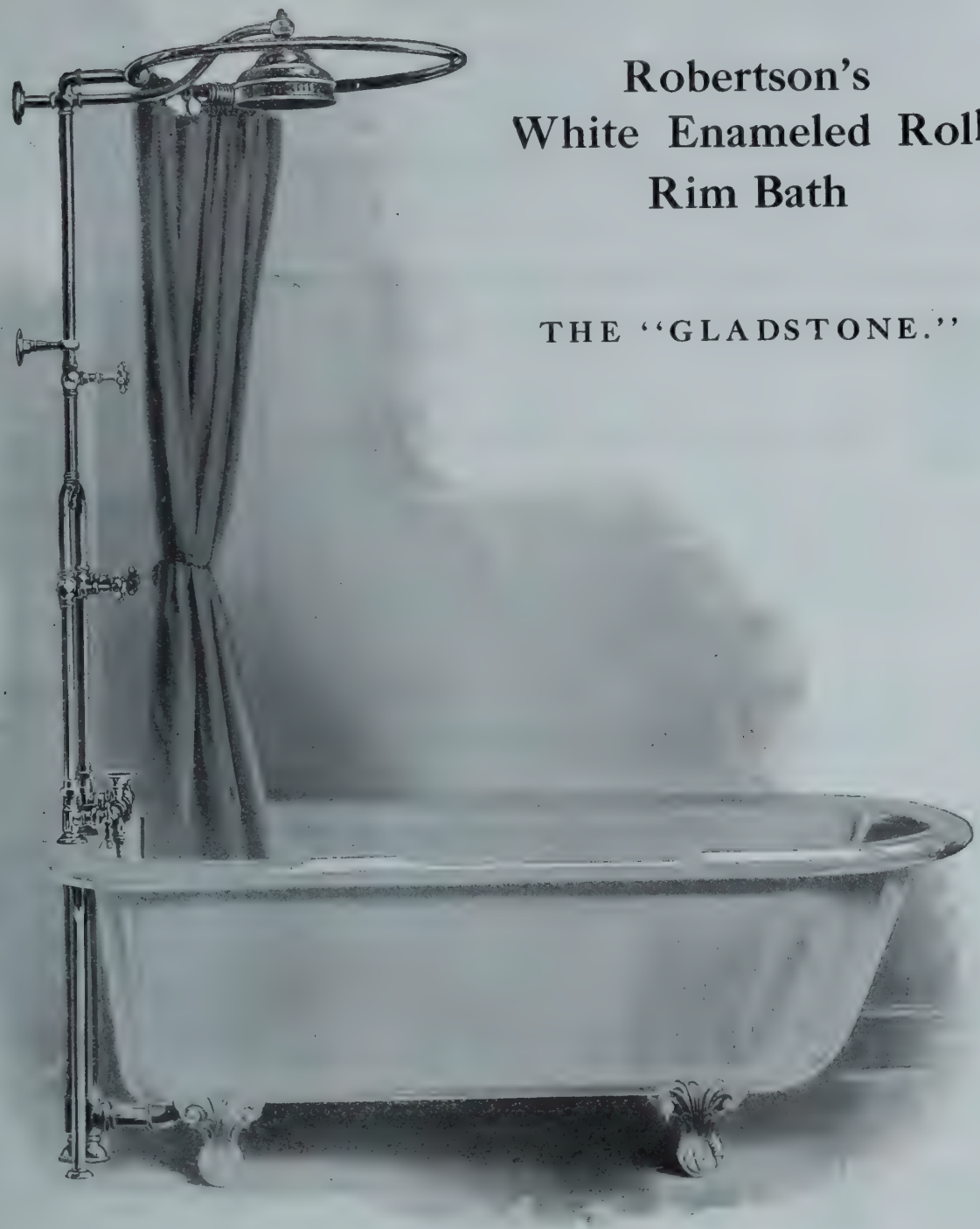

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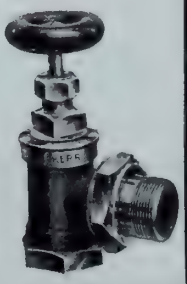

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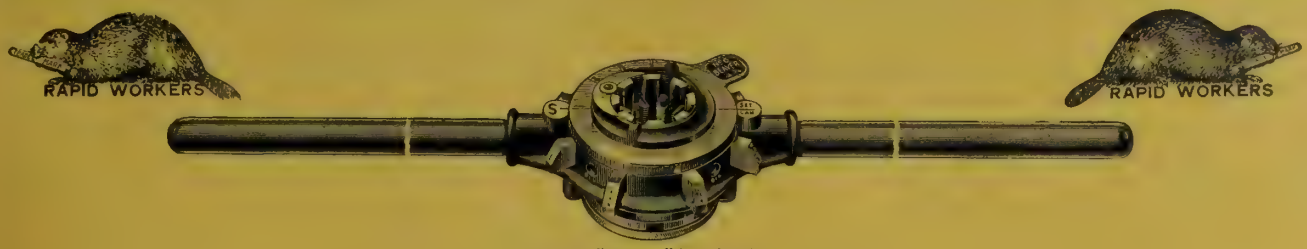

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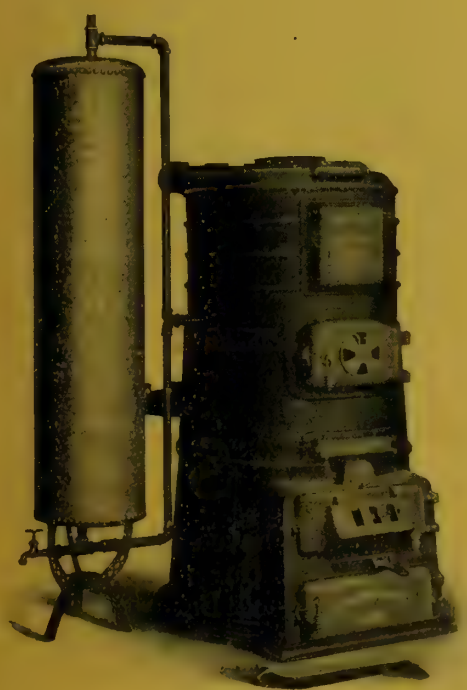

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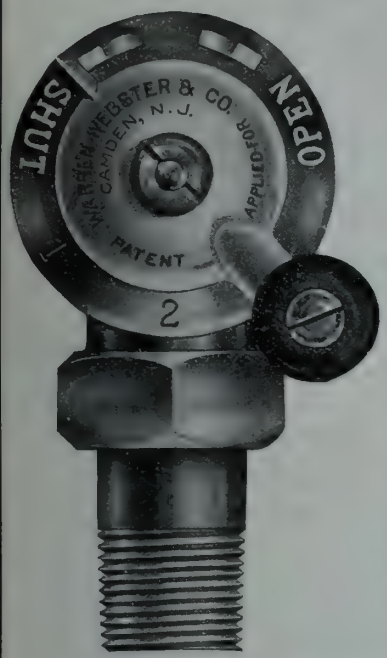

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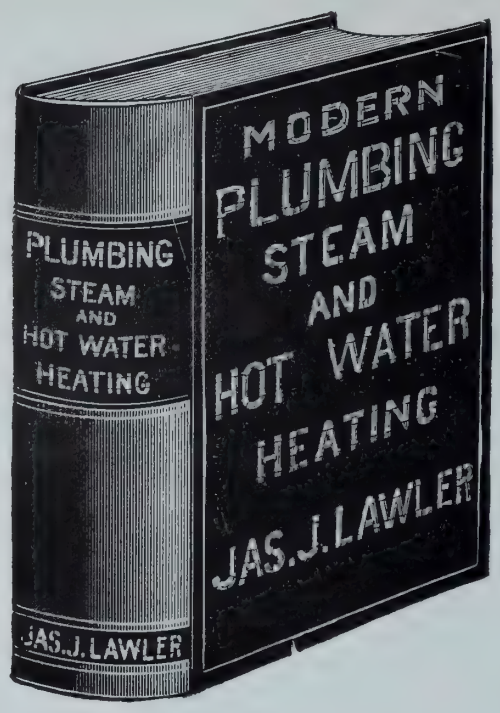

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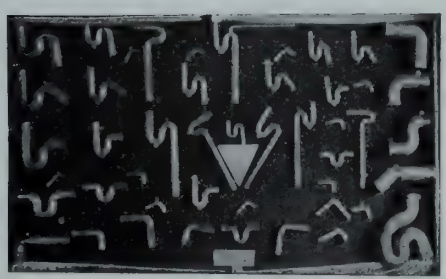

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TORONTO, JUNE 15, 1909

MONTREAL INVITES CONVENTION AGAIN.

Montreal has again come to the rescue of the National Master Plumbers' Association. At a meeting of the Executive held in Montreal, convened for the purpose, President J. A. Gordon, presiding, it was decided to invite the members of the Association to Montreal again, this time in September from the 13th to the 20th, during the "Back to Montreal week" celebration. Various reports from the different centres were read, but it was seen that no invitation would be forthcoming this year, and so it was decided to hold the convention in Montreal. Secretary Munday was authorized to write to all the vice-presidents and officers of the Association informing them of the decision, and asking for co-operation in the endeavor to hold a full convention instead of an executive as in the case last year.

A very encouraging letter was read from Provincial Vice-President Dexter, Nova Scotia, saying that the local association could not see their way clear to invite the Association this year, but hoped to make a strong bid for the convention in Halifax in 1910.

It is now up to the Association to show their appreciation of the Montreal members by attending the convention in full force. It is a strain on the local members to hold the meeting three years following, but they will not mind if the Association generally will back up their efforts by a good attendance. The members should make this coming convention the best in the history of the Association.

NO MEETING AT WINDSOR.

Finding it impossible to secure a sufficient number of promises to attend a meeting of Ontario master plumbers at Windsor if one was called for that place during the U. S. National Master Plumbers' Association convention at Detroit June 22 to 25, vice-president George Cooper, Toronto, has decided to withhold his call for a meeting at Windsor and urge as many Ontario master plumbers as possible to attend the Canadian national convention at Montreal next September.

That a strengthening feeling in favor of organizing in Ontario exists is evident from the replies received from men in the trade who were willing to attend a meeting at Windsor, one promise to be present coming from as far west as Port Arthur. Unless about twenty guaranteed that they would attend, however, it was felt inadvisable to call the meeting and the number of assurances fell short of that number.

The generous invitation extended by Montreal Master Plumbers to hold this year's convention in the Royal City turned the scale and decided Mr. Cooper, after a conference with other men interested in the work of organization, to center all efforts on making the convention at Montreal a success. Cheap rates will be available to Montreal from all points and a big programme of entertainment is also assured.

The way is now clear to make this year's convention at Montreal the greatest ever and master plumbers in Ontario, Manitoba, Nova Scotia, New Brunswick, and other provinces can best show their appreciation of the courtesy in entertaining the national convention for a third time by making the gathering representative of all sections and having it start a new era in trade association work

BUSINESS METHODS OF MASTER PLUMBERS.

There is no doubt that the average plumber is not naturally a business man. He is a hard and conscientious worker, he is intelligent, and a genial fellow to meet, but not a business man. The routine of ledger work bothers him, the getting out of accounts is a nuisance, and he has but a vague idea of estimating on a job so that all his current expenses are included.

How many plumbers take into consideration overhead expenses? They put down so much for material, so much for labor, and so much percentage for profit, and there you are. But what about lighting, wear and tear of tools, and the general upkeep of the establishment. These expenses are ignored, and yet many a plumber would be surprised to learn how such items unless included, cut down the profit allowed on any job.

Each piece of plumbing work should bear its share of overhead expenses. There should be no guess estimating. If a plumber wants to make a success of his business, he must get down to a hard and fast system. There must be thorough checking of material, thorough checking of every item on which the estimated price of the job is based, due percentage allowed for the whole cost of running the business, and a fair profit added. Unless this is done the plumber is working for nothing.

It may not be possible for every master plumber to afford some one to look after his books. But where it is

possible we advise every man to have a bookkeeper. Although the latter's work does not show any return, yet it is far from being really unproductive. A thorough system of bookkeeping so that the plumber can tell at a glance where he stands, prompt issuing of accounts, prompt collecting, and correct estimating of material, mean the saving of many a dollar to the plumber, much more than the cost of the clerk would be.

A case was brought before our notice the other day where a plumber had to check the bill of another plumber for some work done for a property owner. On going over the work, the examining plumber was surprised at the lowness of the account. He found on looking at the details that the plumber in sending in the bill had forgotten to include the cost of many feet of piping, and of various other material put in. The examiner forthwith pointed out that a mistake had been made, that the workman had defrauded himself and the landlord was conscientious enough to pay up the full amount. In the rush of business the plumber, who had done the work, had forgotten to include the items. He had trusted to his memory and it had failed him. How many times had this sort of thing happened. Probably more often than the plumber would care to know. The cost of a clerk would have been paid over and over again in this way alone.

But if a plumber cannot afford even to pay the cost of a lady clerk, he must take hold of himself seriously and make himself a business man. He must do things in a systematical way. He must put in some time every day on his books no matter how tired he may be after a heavy job, and he must not leave things to his memory. He must jot everything down on paper, and be very careful as to the checking of material. If accounts are kept correctly of all expenses it is easy to estimate how much percentage of overhead charges each job should bear. But There is no getting away from the fact that unless the plumber pays attention to his books, no matter how small the jobs are, he will lose money instead of making it. In business it is the saving on little details that count, and no item is so small that it should not be properly entered. The sooner the plumber puts his bookkeeping on a proper footing, the quicker will he reap the benefit of his work.

SANITARY ASSOCIATION DOING GOOD WORK.

The Provincial Board of Health of Manitoba will receive a deputation in the near future from the Winnipeg Sanitary Association, who will lay before the Board a number of important questions affecting the health of the citizens. The questions to be considered will be the condition of the street sewers, the emission therefrom of offensive discharges, and the deposits of solids and animal refuse in the two rivers ; the throwing of city refuse on low-lying lots which are covered over with a this layer of soil, and to discuss the action of the city authorities in permitting residences to be erected on such garbage ; the need for drainage of stagnant water in low-lying lots where the city's grading of streets has prevented ordinary ventilation. Other topics will include regulation of tenement or apartment blocks. In reference to the latter question at the last session of the local legislature very comprehensive powers were given to the city to deal with such questions, but these have remained a dead letter although several apartment blocks have been erected or are in course of construction in the same lines as those which were objected to.

The Sanitary Association is to be commended for the interest which it has manifested in the public health since its organisation, and for the agitation for the betterment of conditions such as are outlined above. The Association has been instrumental in inaugurating reforms that have lead Winnipeg to be recognized as one of the foremost cities on the continent regarding plumbing and sanitation.

It is generally admitted that it is due to the impetus given by the Association, that the health department were able to make such extensive plumbing instalations. Since the new year over 320 notices have been issued by this department for the abolition of outhouses in the Elmwood section alone. These notices will all be carried out during the next few months. The city officials have just completed the boring of an artesian well for the supply of water to that section of the city.

BURSTING OF TWO WATER TANKS.

Two water tanks, each of one million gallons capacity, recently burst at Parkersburg, W. Va., within twenty seconds to one minute of each other, according to different observers. The tanks were about eleven feet apart, and it is probable that the bursting of the second was caused by the flying parts of the first. Although the two tanks held but two million gallons, nearly half the sidewalks of the town were flooded over an area of one-half mile wide and three-quarters of a mile long, the water between curbings reaching a depth of twelve to fourteen inches. Two houses were wrecked and carried two blocks from their foundations, two occupants being killed. A church was also wrecked and carried a block, parts of the organ being found five blocks away.

The tanks were sixty-five feet in diameter and forty feet in height, and were erected twenty-four years ago. The bottoms were made of $\frac{3}{8}$-inch plates, laid on a bed of mortar with a course of stone masonry about 2 feet wide around the circumference. The walls of the tanks were composed of ten course plates, each 4 feet wide and varying in thickness from $\frac{3}{4}$ inch at the bottom of the tank to 3-16 inch at the top. An examination made after the accident seems to prove that the walls of both tanks parted in nearly straight lines, perpendicular to their bottoms, and at points beginning a few feet from the base and extending more than half way to the top.

Of the effect of the bursting of the tanks and the rush of water, some idea may be gathered from the following description : A 45-foot iron ladder, which had been fastened to the side of one tank, was wrapped around the trunk of a tree some distance away. The collapsed tanks themselves after the accident looked very much like deflated balloons, the side of one being carried 100 feet from its original location.

NATIONAL M. P. A. OFFICERS.

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Chairmen of Committees—Sanitary, P. C. Ogilvie, Montreal; Legislative, H. A. Knox, Ottawa; Apprentice, James Griffin, Montreal; Essay, H. L. Chandler, Ottawa.

Manufacture of Enameled Cast Iron Ware

Method of Making Sheet Lead and Wood Bath Tub Patterns Described by Dillon Underhill in The Foundry—The Second of a Series of Articles on the Evolution in the Making of Sanitary Ware.

After the design has been decided upon, the production of the pattern is the first step in the manufacture of a bath tub. Before the pattern is started and to insure the proper shrinkage allowance, it should be ascertained whether only a working pattern is to made, a working pattern and a master pattern, or a working pattern, master pattern and a grand master pattern. To understand more clearly why these conditions prevail and are of importance to the pattern-maker it might be well to cite actual cases. A large jobber of tubs believes he can sell a new design and he has a working pattern only made according to his ideas. As he is compelled to pay the cost of this experiment the manufacturer endeavors to make the working pattern with the least expense to the jobber. If a new rim only is desired an old pattern may frequently be fitted with wood core prints screwed to the rim, and cast iron or wood core boxes can be made to core out the desired shape for a working pattern. While this is only a makeshift for getting out a single pattern, nevertheless it frequently answers the purpose as well as if a lead pattern had been made. In some foundries, working patterns are frequently made from other working patterns and for this reason we frequently see five-foot tubs from the same maker which are neither the same length nor width. It can readily be appreciated what this method would lead to if frequently repeated.

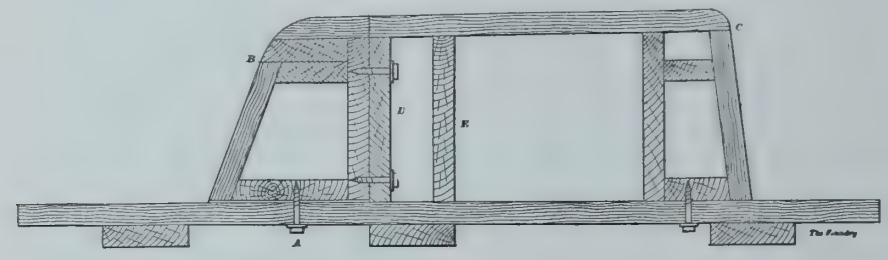


Fig. 4—Longitudinal Section of Form and Follow Board of a Lead or Wood Pattern for a Five Foot Bath Tub.

Lead and Wood Patterns.

If a new design of the body of the tub is desired at least two patterns are necessary. A lead or wood pattern is first made and from this all of the working patterns are constructed. If the sales show only a fair demand for this style of tub only the master or lead pattern and the cast iron working pattern are built. Furthermore, if the tub is to be molded by hand, invariably only these two types of patters are made. When the demand for a certain style tub is heavy, those that are hand molded frequently have a grand master lead or wood pattern, a cast iron master pattern and last, a cast iron working pattern. All tubs which are made on machines are provided with these three types. After the lead pattern has been altered for the various sizes desired, it is advisable to melt up all parts except the large section of sheet lead inasmuch as there is little danger of the cast iron master pattern being broken, and it does not pay to keep the lead grand master pattern about the shop.

When the shrinkage has been determined the pattern thickness, whether made of lead or wood, must be decided upon. Outside of these two details the method of proceeding with the first pattern is practically the same in all cases. For this first pattern, one of two materials is used for the pattern itself, wood or sheet lead. In each case, however, a built-up wood form and follow-board of the same shape are used.

Pattern Form and Follow-Board.

In Fig. 4 is shown in detail the construction of a 5-foot pattern form and follow-board. The latter is built up of two-inch boards, surfaced on four sides and nailed to three 2 x 8-inch pieces to hold it firmly together. In spacing these cross-pieces they should be placed so that when the wood form is shortened, the lag screw at A will not pass through the cross pieces, but only through the follow-board as shown. If the cross-piece is placed too far toward the head of the pattern, it will be necessary, when shortened the second time for the 4½-foot tub, to use longer lag screws than for the five-foot and the 5½-foot patterns, or to carve down into the cross-pieces to get the lag screws to hold the form securely to the follow-board.

For a 5½-foot tub, a follow-board, 4x8 feet, is desirable but not necessary. A suitable flask is usually secured which will answer the purpose with a few minor alterations, and the follow-board can readily be made to conform to the flask. Only one casting is made from this original pattern, and therefore it is necessary to make it as cheap as possible. The follow-board is first constructed and after the top has been planed and levelled to a smooth surface, a plan of the tub around the rim, the shrinkage having been allowed for, is scribed on this top surface and inside of this is built the form. The ends of the form are then built up, placed in position and fastened to the follow-board with lag screws.

The Lead Pattern.

The method of making the lead pattern will first be discussed inasmuch as this material is now generally employed for this work. In Fig. 11 is shown a lead pattern almost completed. For all flat surfaces as well as the larger curved surfaces, sheet lead is drilled and bent down to fit snugly against the heavy wood form. Sheet lead, ¼ or 5-16 inch in thickness is used, depending on the shrinkage and the ramming of the pattern. As the lead pattern is heavy to handle the sand is not usually rammed as hard as against a working pattern, and it has been found that a casting from a lead pattern has a slightly greater thickness than one made from a working pattern of the same thickness, and as a minimum amount of filing is desired the thickness of the cast iron pattern must be taken care of in the lead pattern. The sheet lead before being applied is chamfered off at an angle of about 45 degrees all around the sheet, and the sharp edge side is laid against the wood. Before the sheet lead is set in place holes for screws are drilled on a small high speed drill press so that the edges will not turn up when bent to place with a wooden mallet. Wood screws, Nos. 9 to 12 and 1½ inches long, are of sufficient size to hold the sheets in place, and a 5-16 inch washer is used under the screw head. Certain sections of the pattern such as the rim, the outlet, and sometimes the small foot-end corners, cannot easily be formed out of

sheet lead, and for these, small wood sections must be made up and from them white metal castings are produced. The ends of these white metal patterns should be scraped or filed so that they can be easily soldered. The composition of the white metal mixture follows: lead 80, antimony 8, tin 12. Clippings from the sheet lead should be saved and can be used in this white metal mixture.

Melting the White Metal.

When melting the white metal a cast iron ladle, with a handle 30 inches long is used. The ladle should have a capacity of three or four quarts and can be heated over a gas burner similar to those used in house heating furnaces. A temporary circular furnace built of fire brick, about 18 inches high, can be provided for melting this mixture in the ladle. The mold should be well vented as the white metal cools quickly and if retarded in its flow, will draw away from the casting. A heavy riser and sprue should also be provided. This metal has a high shrinkage and occasionally it is necessary to make a number of castings before a perfect one is obtained.

Soldering Castings to Sheet Lead.

If a fine grade of molding sand is used these castings usually require no filing, outside of the cutting off of the gates and the removal of the wire-like fins made by the vents. The ends which are to be soldered should be filed. It is best to make these castings first and to put them in place before starting with the sheet lead work, so that the latter can be fitted to the castings. It would be unwise to cut the lead after it is screwed in place against the wood form inasmuch as in cutting the lead the form would be dented or notched and the lead or solder would get a hold in these cavities and make it difficult to take the pattern from the form when soldered up and the screws have been removed. When the parts have been secured in place, the white metal castings and the sheet lead are all soldered together. For this purpose a copper soldering iron is used. Three soldering irons weighing eight or ten pounds can be used to advantage with a gas furnace. These enable the operator to have a hot iron in use while the others are heated.

After the castings are soldered to the sheet lead, the wood screws and washers holding the pattern to the form and the follow-board are removed and are placed in a box or drawer to be used over again. The pattern is then ready to be taken from the form, and as the lead pattern usually sticks to the form it is necessary to have a chain hoist of at least 1,000 pounds capacity to turn over the follow-board, form and pattern. These are then suspended with the pattern only a few inches from the floor and by striking the pattern with a wood mallet it is released from the form and drops to the floor. From the chain hoist can also be suspended the sheet lead which comes in rolls, and by placing a round bar through the roll the lead can be unrolled as desired.

Finishing the Pattern.

After the pattern has been removed from the form it will be seen that the solder is not smooth on the inside nor are the joints perfect. It is, therefore, necessary to fill up the cavities which appear on the inside and to finish the joints. Both the inside and the outside of the pattern must be scraped perfectly smooth so that the pattern can be easily drawn from the sand. The sheet lead will usually have a sufficiently smooth surface, but all joints inside and outside should be scraped.

Owing to the difficulty frequently experienced in securing a good grade of solder consisting of half lead and half tin, it is advisable, owing to the large amount of lead scrap made in making these patterns, to cast the solder required for this work.

The openings left by the screws are filled with beeswax and are available when the pattern is to be shortened or lengthened, and thereby a second drilling is obviated. Small defects in the pattern may also be filled in the same way, but unless the cavities are small and deep the wax will fall out or will be knocked out when ramming the pattern. The melted wax is applied with a putty knife and after it has hardened, two or three thin coats of shellac are applied, each coat being sand-papered after the shellac has set. The pattern is then ready for the flask.

The expense of making a lead pattern of this kind varies from $100 to $200, depending upon the style and size of the tub and whether or not the sheet lead has been previously used for another pattern. The dimensions of a five-foot tub are measured over the rim and not inside of the body. The one exception to this is where an extra large rim is used and the body of another pattern has been appropriated.

Wood Pattern.

Some concerns use the form described together with the follow-board, but build a wood pattern instead of a lead pattern for the original. However, the majority of the manufacturers of cast iron sanitary ware prefer lead patterns for their tubs. For making the wood pattern a skillful patternmaker is required, and as the body of the pattern is only 5-16 inch thick, and frequently only ¼ inch it is at best very frail. With such a wide surface to be glued together the joints do not hold and dovetailed pieces of wood must be used to hold the larger sections together. Even when these precautions are taken the pattern frequently warps out of shape when bedded in the damp sand. The curved sections being very thin are fitted only with difficulty around the curved ends and corners, and thin pieces of paper must be put over the form to prevent the glue from sticking the pattern to the form. Furthermore, the pattern can only be reduced with difficulty from 5½ to five feet or lengthened as desired, and even the best wood pattern can usually be used in the sand only three or four times as the pattern can be easily split by a few hard taps with a mallet.

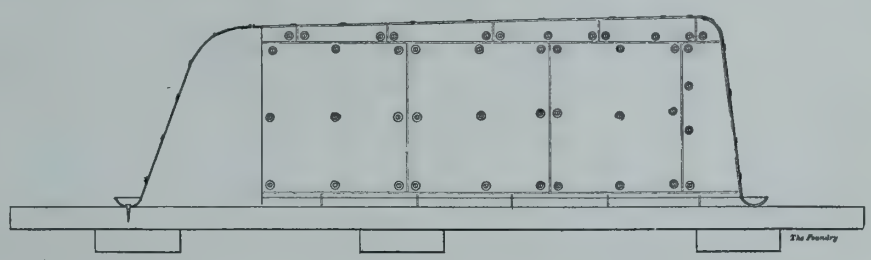


Fig. 11—Method of Applying White Metal Castings and Sheet Lead to the Form and Follow Board.

HONEYWELL DOUBLES MANUFACTURING CAPACITY.

The Honeywell Heating Specialty Co., Wabash, Ind., has completed an addition to its plant which will double the capacity for the manufacture of heat generators and other specialties.

TRADE CONVENTIONS.

The National Convention of Master Steam and Hot Water Fitters of the United States is being held this week, June 14 to 17, at Niagara Falls, N.Y.

The Nation Master Plumbers' Association of America holds it 27th annual convention at Detroit, June 22 to 25.

The American Society of Heating and Ventilating Engineers is to hold its summer meeting at Indianapolis, July 15 and 16.

Three-Inch Soil Pipe in Dwelling Houses

Charles M. McHugh, Plumbing Inspector, Cedar Rapids, Iowa, Explains why He Does not Approve of using 3-inch Pipe in Ordinary Dwelling Houses—Paper Read at the Recent Convention of Plumbing Inspectors.

It may be possible that I am wrong in my opinion of a three-inch soil pipe, but in my experience I believe that we have reached the limit of decreasing the size of soil pipe when we are at four-inch, and not unless it can be proven to me that a three-inch soil pipe will stand the test under all the conditions from syphon fixtures and all other conditions that it comes in contact with will I submit to its use.

Suppose a job of three-inch soil pipe is installed in an ordinary dwelling house with a complete bathroom on first or second floor and that later on another closet or some other fixture should be installed on the same line of soil pipe without any revent of it, and suppose further that on some floor below the

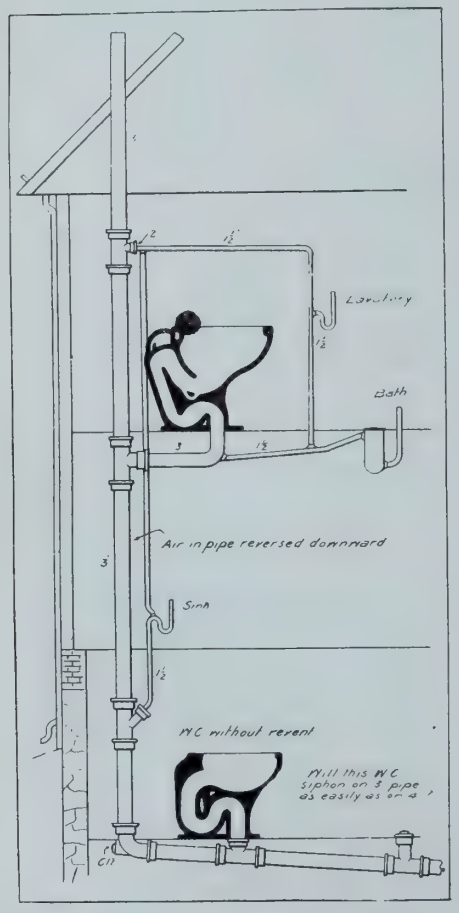


Fig. 1—Unvented Closets.

first bathroom that was installed there was a strong syphon flush with almost a three-inch outlet through the bowl. Now, show me why the lower fixture will not syphon, and especially if it is located in the basement where it is not very often used. In some instances there is no plumbing ordinance or plumbing inspector to enforce the proper way of installing plumbing, and in many other cases there are ordinances, but the inspectors are unable to enforce a proper way of reventing fixtures. In my experi-

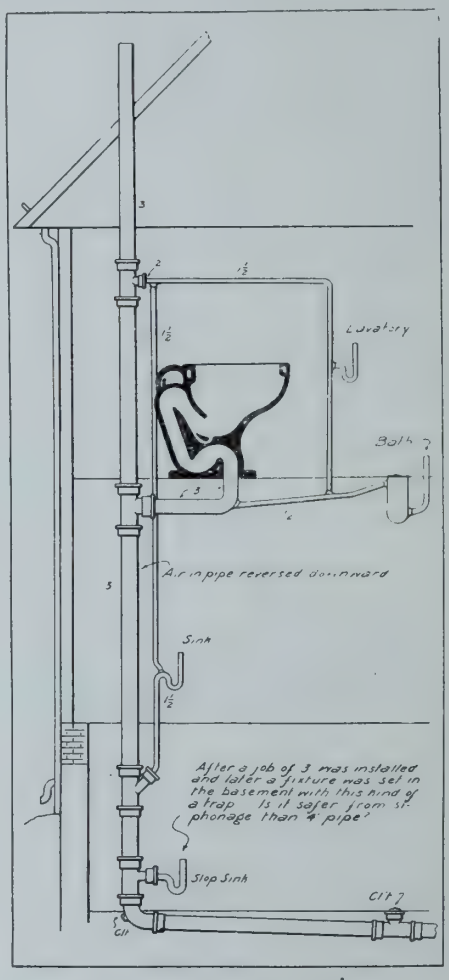

Lavatory
Bath
Air in pipe reversed downward
Sink
After a job of 3 was installed and later a fixture was set in the basement with this kind of a trap Is it safer from siphonage than 4" pipe?
Slop Sink

Fig. 2—A Common Danger.

ence I have failed to see the fixture that will not syphon under all conditions in which it is liable to be placed. I therefore believe that such fixtures or traps have not been invented yet that will not syphon.

When we figure the size of the openings through closet bowls, we must figure the largest opening instead of the smallest, and the largest opening in some of the bowls would be close to three inches. In a three-inch waste pipe, where the vertical waste and vent piping is run in such a way that the closet is connected direct into the vertical pipe, and where bath tub and wash bowl also are connected at the same point, there is a strong likelihood that all the space will be taken up and give the best anti-syphon traps a crucial test for syphoning. With the air in the soil pipe being reversed, the drainage is discharged from closet and it is possible that other fixtures might be discharged at the same time, which would help to increase a stronger downward draft resulting in pulling the seal from the trap that was not revented.

I believe it would be unfair to take the smallest openings in closet bowls as an argument for three-inch soil-pipe, taking into consideration the conditions that it might be submitted to. The safety of public health demands absolute certainty that it will perform its duty. There are a great many cities throughout the United States that have no laws govern-

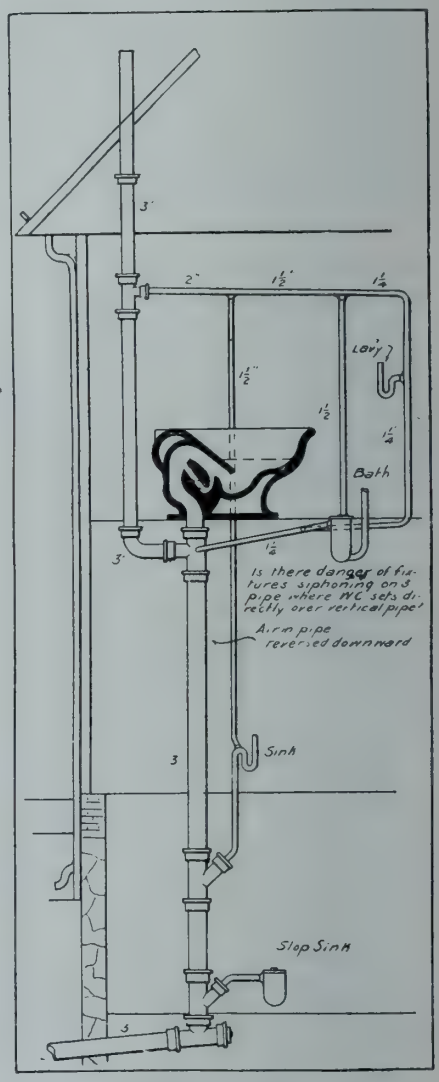

Lav'y
Bath
Is there danger of fixtures siphoning on 3 pipe where WC sets directly over vertical pipe?
Air in pipe reversed downward
Sink
Slop Sink

Fig. 3—Showing Venting.

ing plumbing, and after hearing that this society approves of the three-inch soil pipe system there would no doubt be many such cities which would take advantage of its endorsement particularly where there is no reventing at all, and in

some of these places there are people engaged in the plumbing business who do not revent any of the fixtures and do not know what a revent is for, and for this reason, I, for one, am of the opinion that we cannot get the waste and vent too large for them.

There is another feature that I would like to call your attention to in this connection, and that is the three-inch lead bend that would have to be used on a three-inch soil pipe job. In some places very light lead is used and we all know that it would have to be expanded to four inches to set a closet bowl in, and by doing so there is danger of breaking the lead where it is flanged over on the floor, and how many inspectors would know that it was broken unless they were there when the closet was set. The chances are that the lead bend or ferrule, whatever, it may be, would not be dressed out to the proper size until the closet was to be set, and then you would have the floor to cut out around it, which would not be a very desirable job with some of the tools that the plumbers carry for doing carpenter work on hardwood floors.

The expense between a four-inch and a three-inch soil pipe on an ordinary job would not amount to more than $4 or $5, and the only person who would be greatly benefited by the change would be the real estate man who builds a great many of the houses for the poorer man nowadays and makes him pay the highest prices that go, and I believe in helping him to get an honest job of plumbing, if he does not get what he pays for in other ways. I will state that I have seen fixtures syphon under some of the conditions referred to on a four-inch soil pipe job. Now, why don't they syphon on a three inch pipe? It is true that it would take several closets flushed at the same time to fill the three-inch pipe with water, but it does not require the full area of that pipe to syphon a fixture with water. It is the strong current of aid that sometimes comes down a vertical waste pipe along with some strong flushing fixture that was discharged above. and then ooming in contact with some fixture in the basement that was easy to syphon, thus causing the mischief. In a great many cases the basement is where such fixtures are affected.

I believe, from a practical standpoint, it would not be well to favor a three-inch pipe for waste and drain on account of the danger that it would carry away the water from several closets at the same time.

This is a question that should be investigated very thoroughly from a sanitary standpoint, and I think it is the duty of every plumbing inspector to stand for what he thinks is the best sanitary plumbing for the public, until it is thoroughly proven to him that there is something better and then it is time to change.

This is yet my view on the proper size of a soil pipe.

Soil, Waste and Vent Pipe Construction

William Hey, Plumbing Inspector, Portland, Oregon, in an address at the Recent Omaha Convention, Explains His Ideas on the Proper Methods of Installation.

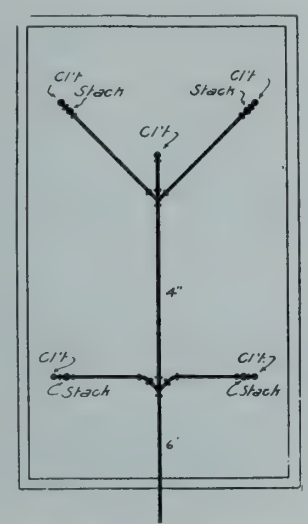
As a rule, tenants are not particular as to how rough they use plumbing fixtures or what they throw into them.

Several points are to be considered in installing soil, drain and vent pipes.

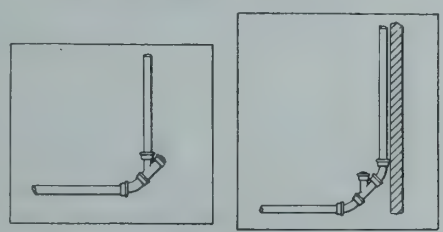
First proper size. Soil and drain pipe should only be large enough to do the work required of them.

Second: Proper fall. In some instances buildings have good soil pipes and drains, but have poor connection to main sewer in street, thereby spoiling the entire job.

For a private house or dwelling not over two stories in height, and containing not more than two toilets and six small fixtures a three-inch pipe is large enough. Soil pipe and drains to be installed as straight as possible, without quarter bends or offsets.



Soil Pipe and Cleanouts.

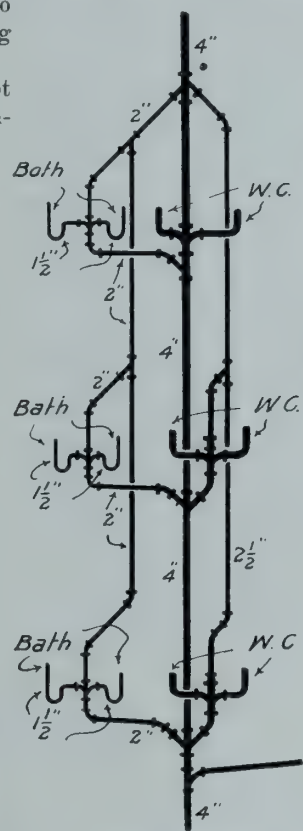


Types of Cleanouts.

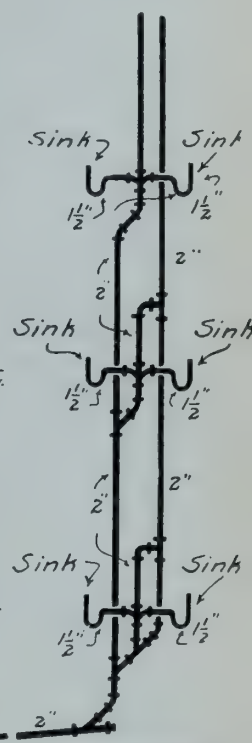
For ordinary work in rented houses, I consider four-inch pipe desirable, for the reason that it would not be so liable to stoppage. In fact I would recomend four-inch soil pipe for apartment houses or all buildings that do not contain more than twelve toilets, or sixty fixtures in all, including small fixtures.

Sink Drains.

The sink drain, as a rule, causes more trouble than any other drain. If sinks are connected direct to soil pipe little trouble, if any, is caused by stoppage. Where sinks are connected to long horizontal runs, especially where drains run underground, sink drains stop up on account of grease chilling on sides of pipe. See Fig. 5.



Venting System.



Sink Connections.

Venting.

All vents should be vertical, or, in other words, "rough vented." No horizontal vents should be installed either for small fixtures or toilets, and "crown venting" should be prohibited. Instead of increasing vent, say from one and a half inches to two inches, branch the vent into stack on "Y" below the lowest fixture and run full size. This would

take care of condensation, scales etc. See Fig. 4.

Clean-Outs.

Clean-outs should be placed at the base of all stacks, as well as at the end of main running line. Same should run above basement floor so that they cannot be used for floor drains. See Fig. 1.

I believe the simplest and best way to put in a clean-out at the base of stack is to use a "Y" and one-eighth bend, using the one-eighth bend on the running line, then "Y" into one-eighth bend, using branch of "Y" for stack and the end for clean-out. See Fig. 2.

This is impossible in some cases on account of location being in a corner or too close to wall. Then the best result is attained by using one-eighth bend on running line of "Y" for stack, and branch of "Y" for clean-out. In this way you have the clean-out in a good location and easily accessible. See Fig. 3.

Different Heating Systems Easily Explained

One Pipe, Divided Circuit, Two Pipe and Overhead Steam Heating Systems Illustrated and Plainly Described by "Phoenix" in Domestic Enginering—Necessity of Ability to Sketch Emphasized.

Every man engaged in the plumbing and heating business should be able to express rapidly and easily his ideas upon paper by the means of a simple sketch or drawing. This means the helper, plumber or fitter, as well as salesman and master. The ability to do this is possessed by few, but it means dollars flowing in the shop's direction. In quickly making a rough sketch to demonstrate your idea to the customer several points are accomplished in that one brief moment.

First: You illustrate in a comprehensive manner that you have already formed a definite idea of how to do the job.

Second: That you are ahead of the rank and file in being able to explain the system visibly to your customer. He sees the point at once.

Third: This gives the customer confidence in your ability and judgment.

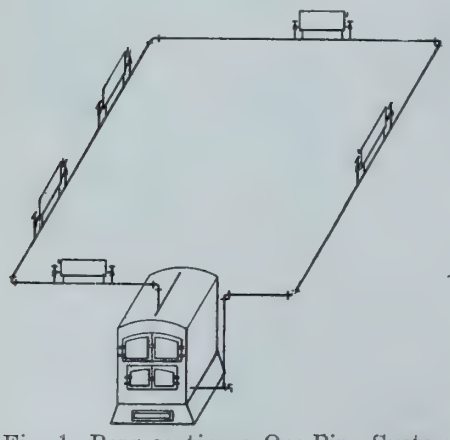


Fig. 1—Representing a One-Pipe System Single Circuit, Either Steam or Hot Water.

Fourth. The sketch can be filed, with measurements, for future reference.

A mere outline is given in the several sketches contained in this article, of several different systems. These simple sketches can be drawn with a few strokes of the pencil, and are sufficiently accurate to give a customer a definite idea of how the mains would be run on that particular system. It is an easy matter to add as much more as may be desired in the matter of branches, risers, radiators, etc. Your customer has probably seen several steam or hot water boilers, radiators, valves and air valves; but what he has not gotten into his head is a clear picture of the general form, or construction of any particular job, and when he can see the run of the piping, with all walls and partitions removed, he will at once comprehend the advantages, or disadvantages, of your demonstration.

A small sketch will many times accomplish more in five minutes than many hours' talking. In Figure 1 an extremely simple one pipe system is shown which may represent either a steam or hot water heating system. In the one pipe steam system it would not be necessary to put on any return on the radiator, yet this has many times been found beneficial where the supply has been run too small, or the radiator was of unusual length and did not readily clear of condensation.

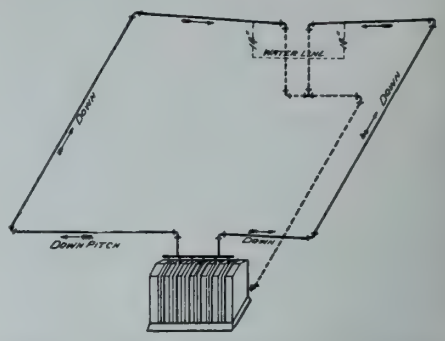


Fig. 3—Divided Circuit Steam System and Method of Connecting the Return.

Several years ago this one pipe system would have been condemned as entirely impracticable and visionary, but now we know better, and with pencil and paper and a very simple little talk, it is possible to show the customer where the condensation goes.

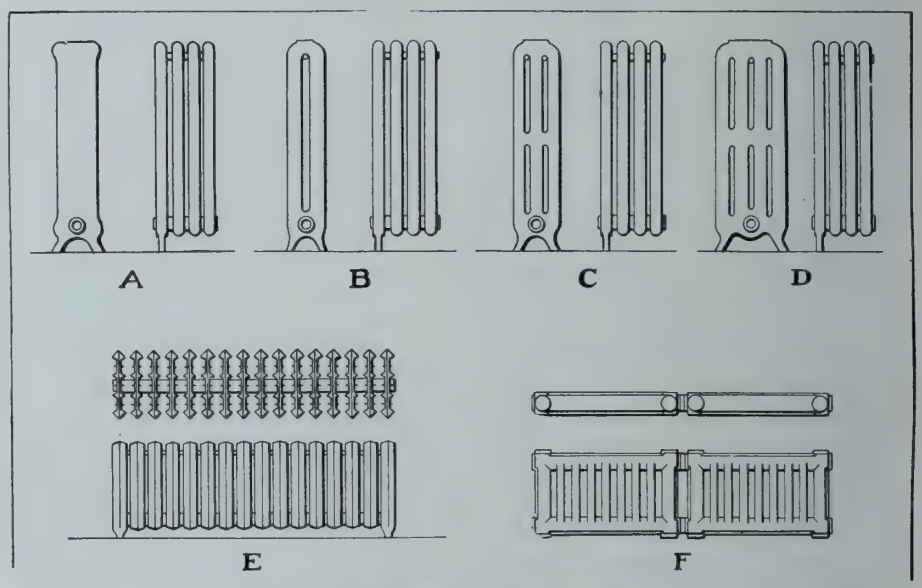


Fig. 2—Various Types of Standard Radiator Sections. The Upper Row, A, B, C and D, Show the Most Common Forms, and the Lower Row, E and F, the Special Forms.

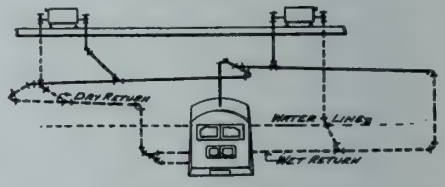


Fig. 4—Single Two-Pipe-Steam Job. Dotted Lines Indicate Return Mains, One on Left Dry and One on Right Wet Return.

At the same time, if you are talking hot water heat he will more readily understand the action and principle of this form of heating, by being "shown."

In Figure 2 a divided circuit steam system is shown with the return represented as dropping below the water line at the point where the two mains join, and continuing as a wet return to the boiler. There is much discussion among different fitters as to the merits of dry and wet returns. It may be stated generally, however, that when a return main is placed below the water line of the boiler, the steam must pass through the system as has been intended for it to do.

When plenty of head room is to be obtained in the cellar excellent results are obtained with dry returns, provided the sizes of the pipes are not reduced too greatly, and a proper grade is maintained upon all mains and branches, so that no pockets or traps are left on the job.

Figure 4 gives an idea of the manner of starting the mains on a simple two

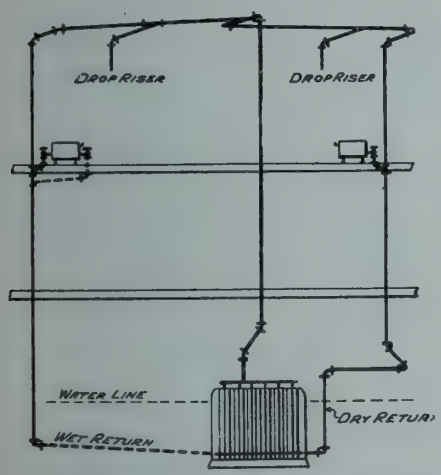


Fig. 5—Overhead Steamheating System, Showing Drop Risers and Method of Connecting Radiators, Also a Dry and Wet Return.

pipe steam job. The return branches and mains (one wet, the other dry) are represented by dotted lines. This system, more or less modified, or enlarged, has been in general use for many years in all parts of the country and represents probably the most expensive layout of the bunch. It was thought by our "daddies" that it was the "one and only," but Father Time has handed it a decided knockout.

Figure 5 gives an outline of an overhead system. This is another system which has caused much discussion as to it merits and faults. Given a very shallow cellar, plenty of room in the attic, and a building that is spread out over much ground, the overhead steam system will probably work to advantage.

All these systems are capable of many modifications to suit particular places and tastes.

Undoubtedly some of these simple systems for house heating, combined with some of the many excellent patented vacuum systems now upon the market would form an ideal form of heating dwellings.

Considerable objection is urged against the vacuum systems in regard to getting them thoroughly airtight; but the same fitter who registers this kick would find small difficulty in making tight the joints on a line of suction pipe hooked up to a pump of any kind or description. Vacuum heating seems to be destined to fill a very important place in the practice of the craft throughout the country.

Estimating on Materials and Contracts

Address by R. F. Rock at the last Convention of the Connecticut Master Plumbers' Association.—Some Practical Advice which the trade in Canada should heed.

It is with reluctance that I attempt at this time to re-wake or recall to the members of this organization a duty they owe themselves and their competitors.

In this period of commercial depression which is resulting in ruinous competition, especially on contract work, we must not lose sight of the fact that work contracted for at the present time must of necessity show a living margin of profit if we are to continue in business or show any consideration to our competitor.

The excuse put forward to justify ourselves "that we took the work at cost to keep our men employed" may be good from the "Samaritan's" standpoint but cannot be approved as good, sound business judgment. You will find, no matter how low you figure that there will be a certain class of competition that has no sense of honor or honesty, and if a cost price is established you will find them anxious to take the next job below cost, and will have no hesitation to skin the work to clear their skirts or make a little profit.

It is certainly more commendable to lose the work after giving a good honest figure and maintain a fair margin of profit than to establish a ruinous price and using your efforts, material and money, often waiting an indefinite period for the return of the same, without adding one dollar to reward you for your efforts.

Should Have Estimate Book.

A very important consideration that every man in our line of business should insist on in estimating is the procuring and use of a suitable estimate book in printed form, which will enumerate each separate part necessary to complete a fixture. You may say that such a course is a waste of time and unnecessary, that you have been estimating for years and have every item fixed in your mind, that you are not likely to forget anything when you figure at random on a stray piece of paper or a pocket blank. Let me advise you that if you once use a correctly compiled estimate book and compare the net results over the old way it will astonish you and show you where your supposed large profit has dwindled to a very narrow margin when you supply all the small items which you have neglected to consider an expense. Permit me here to quote a statement made by one of the oldest Master Plumbers of this state, when the estimate book was introduced by our local Association. "Why, if I were to figure all these little items on the jobs I would never be able to secure a contract." This statement was made in all seriousness and honesty, and, gentlemen, I am led to believe that a great many jobs are taken on just such loose business lines. We make ourselves believe that we are figuring on a certain per cent. of profit and neglect to use sane or intelligent business methods to assure us this result or profit which rightfully belongs to a man who successfully carries on and honestly fills the conditions of a contract.

Plumbers Rate Themselves Low.

The old saying, "the laborer is worthy of his hire," does not seem to apply with the men in our profession or business, as you may wish to term it. Compare the business men in other lines and other walks of life with the Plumbing Contractor of to-day, and the technical knowledge that he must possess, the years he has spent to acquire it, and the small competence which he is allowed to derive from his efforts.

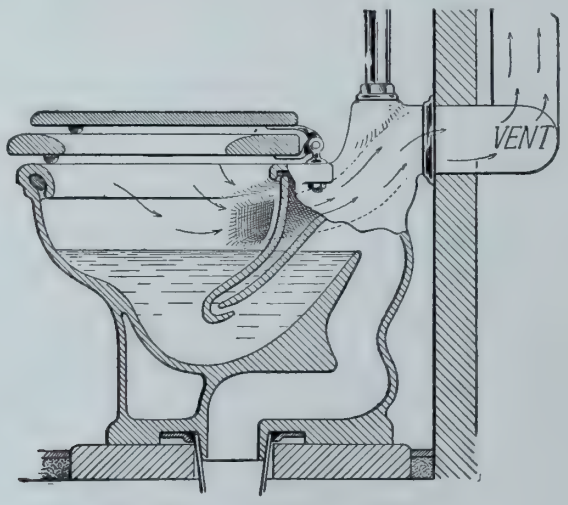
The Plumber or Sanitary Engineer is of vast importance to the world; except to himself, however, this was unknown until recent years. He kept this importance to himself and from his fellow-citizen, and so it is not to be wondered at that he finds little or no appreciation on the part of his fellow-men. Being of a retiring disposition and seemingly of no great public importance, it is only natural that his services would be unappreciated and undervalued.

Service is often measured by our own standard. If we elevate ourselves, so may we to the same extent expect the respect of others, and for the same reason we will be valued by others by the value we place on ourselves and our work.

We must seek to become business men as well as mechanics. Technical knowledge is not all, as many of us have long since found. We must perfect ourselves in commercial training and our financial condition will be more favorable in proportion to the business ability we develop and the systematic manner in which we devote our efforts. I firmly believe that we compare favorably with the most advanced of other crafts and that we keep pace with them. We must try to excel and to the degree we progress will we be valued. We should attend our Local Association meetings and strive to advance local sanitary conditions, make our organization more substantial, advance each others welfare and by a more general participation in the world's movements, secure a more equitable distribution of knowledge and opportunity.

THE "BEEKMAN" WATER CLOSET.

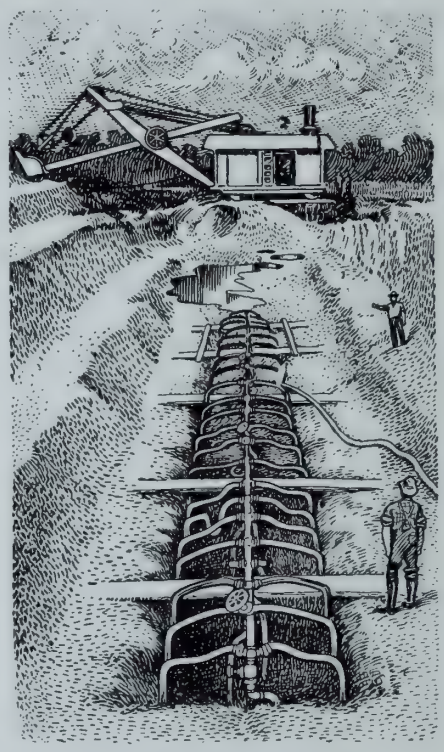
The accompanying illustration gives a fair idea of the "Beekman" syphon water closet, manufactured by The Mott Iron Works, New York, with Canadian offices at Montreal and Toronto. As may readily be seen, the "Beekman" (as well as all the other syphon closets made by this company) is constructed on somewhat novel lines, in that the jet opening is concealed from view. The water enters the bowl from the flushing-rim, thus cleansing every part of it; and because of the shape of the bowl the bottom is thereby prevented from becoming discolored. This closet is also fitted with the "Boston" vent, which claims three strong points; the area of the vent is extra large; it is so constructed that the vent is above the top edge of the closet, so that any overflow that may take place from stoppage in the closet is not forced into the vent pipe; and each time the closet is operated the vent chamber is flushed as well as the bowl.



The Beekman Water Closet.

HOW TO EXCAVATE WET SAND.

The digging of the ditches for the sewer pipe in the new city of Gary, Indiana, presented a serious proposition,



Pumping Water from the Trench.

as the sand unconfined will flow in from a radius of 15 ft. if an excavation is made 1 ft. deep. This sand when dry is very fine. The land is low and in many places there are surface ponds 3 or 4 ft. deep. The contractors overcome this difficulty by using a series of 2-in. well points 3 ft. long, connected to each other with 2-in. pipes 13 ft. long, which are jetted in a double row near the centre of the trench. This arrangement allows the sheeting to be driven on either side. The series of well points are connected to three pumps and the vacuum pump attached to the first section drains the excavation immediately adjacent to the scraper bucket excavator.

REGULATIONS IN PENNSYLVANIA.

The plumbing regulations which have heretofore been in force in second class cities are, through an act of the Pennsylvania Legislature, extended to cover third class cities. This is in line with the equipment of the Pennsylvania State Department of Health with the power to take precautionary measures in connection with schools. The new law in connection with the plumbing regulations provides for the examination, licensing and registration of persons engaged in the plumbing or house drainage business and imposes fines, penalties and the forfeiture of licenses when the regulations are violated. Now, several Pennsylvania cities will be in a position to appoint a committee to examine persons making application for a license to do plumbing work and to award them a certificate of competency so that they can take out a license and register when they show suitable proficiency. The examining board will probably consist of a health officer, a plumbing inspector and two competent plumbers.

FORBES PATENT DIE STOCK.

Any plumber who has done cutting or threading of pipe, especially large sizes, and this means practically every man in the trade, will be interested in the illustrated catalogue published by The Curtis & Curtis Co., Bridgeport, Conn., manufacturers of the "Forbes' Patent Die Stock," descriptive of improved pipe-cutting and threading machinery for hand or power. This company claim that by the use of their machines one man can cut off and thread a twelve-inch pipe by hand without the need of an extra vise. One of the most recent improvements is the adjustment on the shell or casting so that wear can be taken up. Each machine whether for hand or power has with it a complete outfit of dies. The catalogue also describes a number of attachments which may be used with the machines for convenience sake, and the various parts of the die stocks are as well minutely illustrated and indexed. Other pipe cutters and die stocks made by the company have a special department, and a price list is included.

Letters from Correspondents on Trade Problems

The Editor Invites Short Letters and Sketches Describing Problems Met With or Original Methods of Doing Plumbing or Heating Work—Name of Writer Required, Though Not Necessarily for Publication.

SOIL PIPE ON RESIDENCE.

Editor Plumber and Steamfitter,—I have been a reader of Plumber and Steamfitter for some months past and find it a very valuable paper for plumbers and fitters. I recently secured a contract for additional plumbing in a residence here which had changed hands, and have drawn on another page a cut of the old S.P. and fittings as well as the S.P. I put in for new work. I recommended the tearing down of the 3-in. galv. iron pipe that was put on the fresh air outlet and to put a 4-in. return bend on same and have it two feet above ground. An opposition plumber in talking to owner said I was wrong and the galvanized pipe was necessary. Which one of us is right. The galvanized pipe is two feet above the S.P. and is not perfectly air tight all the way up. I hope I have given you all the necessary information for an immediate reply.

W. B. G.

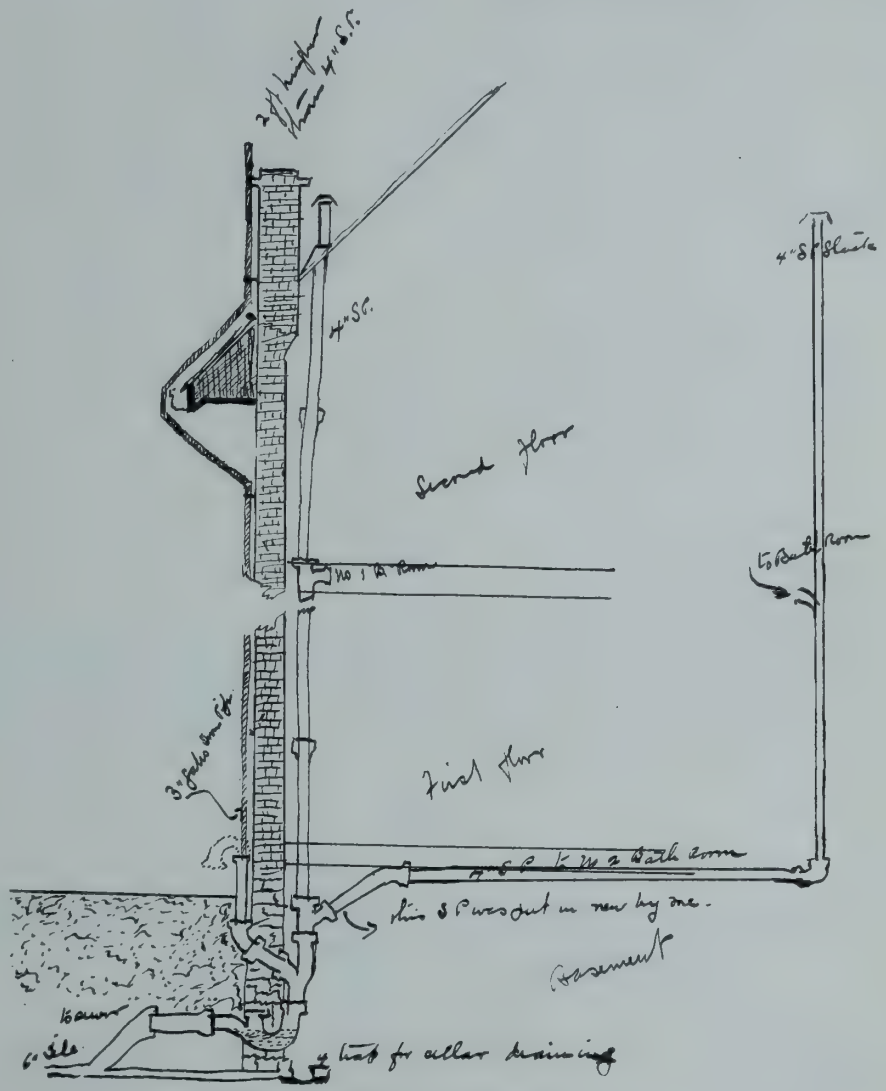
Belleville, May 29.

The correspondent is right in his supposition. The 3-inch galvanized iron fresh air pipe as drawn on his sketch is absolutely useless to ventilate the drainage and should be torn down. This should be done as he states. The breathers should go up 2 fet above ground and be capped either return bend or ventilating cap.

The reason the breather is of no use as it now stands is as follows: The fresh air pipe is 2 feet above the soil pipe. The result is there is no circulation in the system. Theair being practically at a balance. Upon the breather being placed as it should be 2 feet above the ground there would be a continuous circulation of air through the drainage system. It is always desirable that the breather should be carried as far from a door or window as is possible.

The position of the main trap as is drawn on the sketch is not correct, however. The trap should not be placed at the foot of any soil pipe stack, as the soil dropping into the same is very apt to break the seal of the trap. We might also state that the way the correspondent shows the trap for cellar draining is incorrect. It is very apt to be syphoned by the discharge of the fixtures. This trap should be fed from a rain water leader so that seal would always be maintained.

C. M. S.



Changes Made in Plumbing Job.

USE OF "STANDARD" NAME.

Editor Plumber and Steamfitter,—In your issue of June 1, page 13, there is a column headed "Standard" Companies May Unite. . . . This article treats also of the recent injunction granted us against the Standard Ideal o., Port Hope, and the only objection we have to find with that part of it is the bald statement that "the injunction does not affect the name of the Standard Ideal Co. in any way, it having been excepted in the present suit," and regarding this we simply give the following quotation from the Honorable Judge Archibald's deliverance:

"Plaintiff does not ask any relief with reference to the name of the Company Defendant. It specially reserves relief concerning that before another tribunal.

This special point referring to the defendant's corporate name is covered by our action now pending in the Toronto Courts, this is merely a technical point, however, and it is practically achieved by the breadth of the present judgment.

However, the principal point in your article that we wish to set straight is the inference that there is a possibility of the Standard Sanitary Mfg. Co. entering into any alliance with the Standard Ideal Co. Thic company are in no treaty whatever and have had no communication with the Port Hope people regarding any compromise and the recent visit of the four officers of the "Standard" Co., of Toronto, had nothing to do with this suit and no conference whatever was held with the defendants or any representatives of theirs in

the matter. The writer was with the officers of our company in Toronto during their visit an has personal knowledge of the facts given herein.

We trust you will kindly put these facts before your readers in your next issue

STANDARD SANITARY MFG. CO.
Montreal, June 10.

J. M. Collins.

NOTE.—The situation, as the Plumber and Steamfitter understands it, is that the Standard Ideal Company were given the name "Standard" by the Ontario government and it was, therefore, outside the jurisdiction of the Quebec court to deal with the use of the name except in that province. As stated, a case is now before Sir William Meridith, Toronto, dealing with this point, but it may be delayed as a result of the appeal of the Standard Ideal Company against the Quebec judges decision. The Standard Ideal Company, are continuing business in Ontario with no change in their name as yet announced.—Editor.

SKETCH OF PIPING.

Editor,—Kindly let me have a sketch of the piping for accompanying plan. Use twin connections on the boiler with 2-inch mains and returns (hot water). I get the Journal from the firm I am with and fiid it very helpful.

J. J. S.

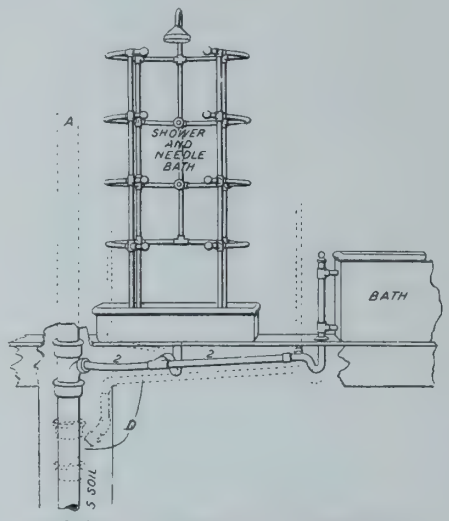
Kamloops, B.C., June 1.

The correspondents plan of the ground and first floor is shown in the accompanying sketch together with a plan of piping which is considered safe to be used in accordance with the conditions briefly named. The returns are not shown they being duplicates of the flow mains shown .

W. W.

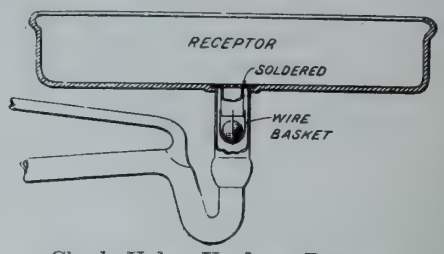
BLUNDER IN PLUMBING CONNECTIONS.

Embarrasment came to the plumbers about finishing up their contract on a magnificent apartment building in which they were in no way restricted, the best possible fixtures having been selected,



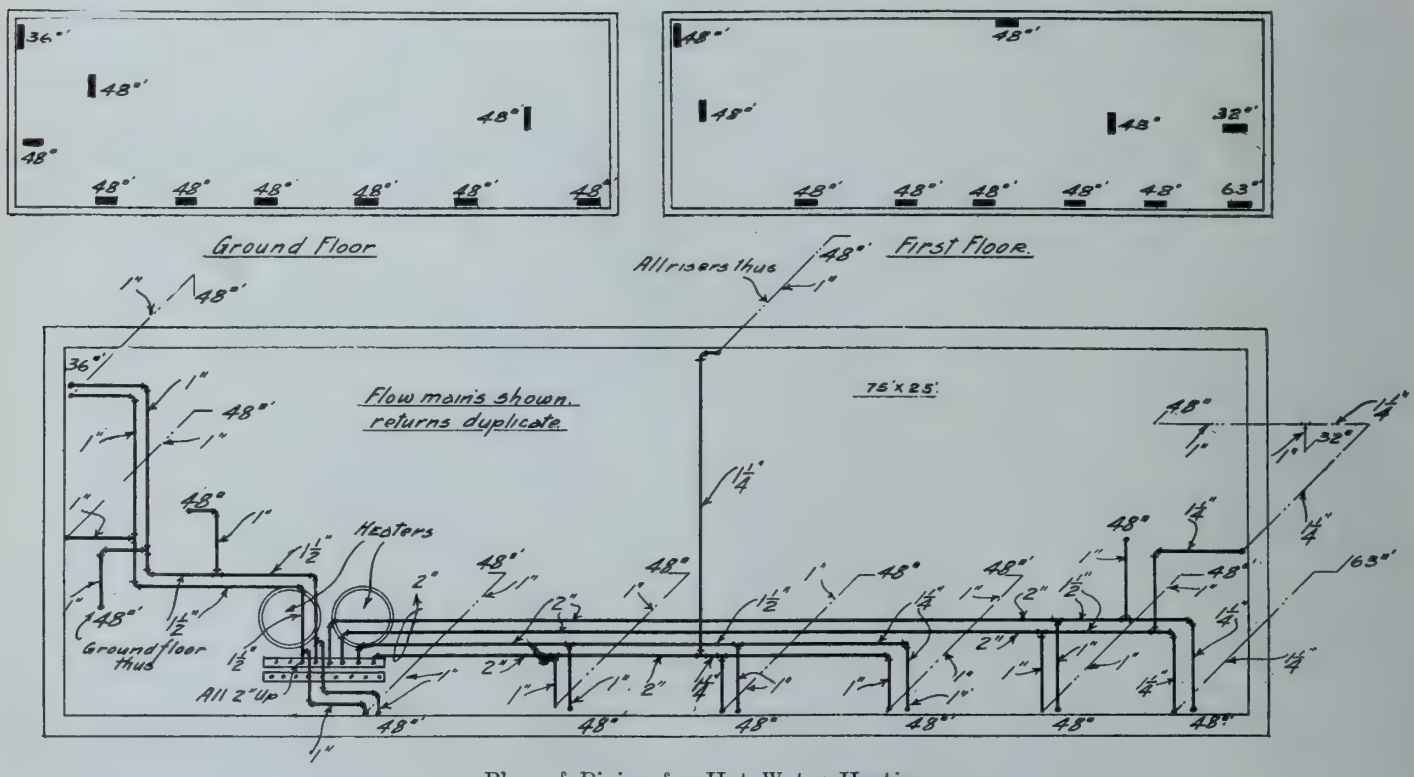
Deficient Drainage Connections.

and in the specifications was a clause that the workmanship should be first class. The first attempt to use the fixtures showed that a rather serious blunder had been made in the waste pipe connections between the bathtub and the receptor for a shower and needle bath,



Check Valve Used on Receptor.

as shown in the accompanying illustrations. The fixtures were joined together by the waste pipe under the floor in such a manner as to make them incapable of properly serving their functions. The unfortunate error discovered in this part of the work was at a time when water was turned on for testing out the fixtures and their supply and waste connections. The test was made by filling up the bathtub and then the standing waste plug was lifted, when to the amazement of the workmen testing out the system the water from the tub backed up into the shower receptor, which, of course, could not be tolerated. It was thought that the 2-in. pipe connection with the 5-in. main soil stack A, as shown in one of the pictures, was clogged in that particular bathroom and a test was made on other floors with the same experience in one after another until the same unfortunate condition was found in 17 different bathrooms, and where the waste piping was roughed in



Plan of Piping for Hot Water Heating.

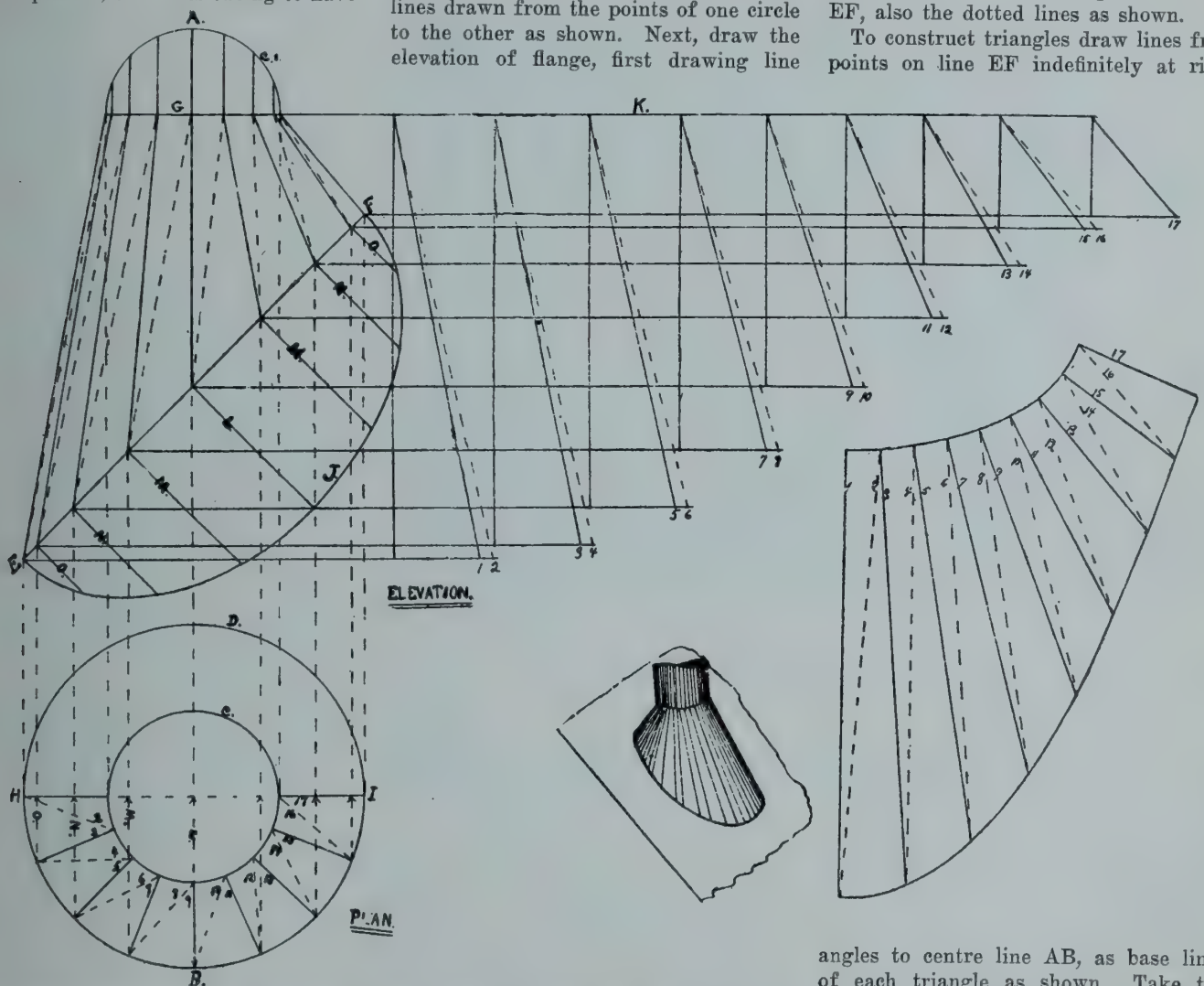
just under the finished tile floor. The architect was consulted and he naturally put the responsibility upon the plumber. The plumber demurred, stating that the work had been done in exact accordance with the plumbing plans and specifications drawn in the architect's office, and making the claim that if the piping had been hung below the floor beams, as shown by the dotted lines, there would have been no trouble. The interchange of opinions as to the responsibility having been made, attention was devoted to devising a remedy without entailing the expense of uncovering the piping and rearranging it, and it was agreed upon that a piece of 2-in. brass tubing should be placed in the outlet pipe of the receptor, as shown in another picture, the brass tubing to have a wire basket soldered to the bottom to hold a rubber ball. The purpose of the ball was to seat against the lower end of the brass tube which was finished for the purpose, so that it could act as a check valve, then water leaving the bathtub would drive the ball tight against the bottom of the tub and prevent entrance of water to the receptor, operating much the same way that a back pressure valve is operated.

The tube is shown in the receptor outlet inclosing the ball in the wire basket with an enlargement at the point of connection so that the method of making it can be more readily understood. It would have been better had the architect consulted with the plumber at the start, when a separate Y would have been recommended to be placed on the soil pipe line and turned to the side and brought up under the floor, as shown by the dotted lines. Then the unfortunate experience would have been avoided which in its adjustment came near if it did not wholly result in absorbing all the profit of the plumbing contract—D. F. N. in the Metal Worker.

Tinners' Pattern for a Roof Flange

To make pattern for roof flange, first draw centre line A B and circles C, D of plan the size required. One-half plan is all that is necessary. As shown by I H, both half-circles must be divided into the same number of squal spaces and lines drawn from the points of one circle to the other as shown. Next, draw the elevation of flange, first drawing line EF, which represents the pitch of roof; then draw line G, which represents the required height of the flange; then draw one half-circle C1, and divide same into the same number of equal spaces as one-half circle C in plan. Draw lines from all points in one-half circle C1 of elevation, intersecting line G. Next draw lines from all points in one-half circle D of plan, intersecting line EF. Then draw from these points lines at right angles to line EF, and take the distance of lines L, M, N, O of plan, and place them on lines L, M, N, O in elevation. Drawing lines through the intersecting points will give line J, which is one-half plan of flange on roof line. Then draw lines from points on line G to points on line EF, also the dotted lines as shown.

To construct triangles draw lines from points on line EF indefinitely at right angles to centre line AB, as base lines of each triangle as shown. Take the distance of each numbered line in plan and place on base line of triangles of the same length, but longer than the straight lines. Draw lines from points on base line to line K, thus giving the true length of each angle of pattern. To make one-half pattern draw the same as explained in previous lessons, for the distance of the spaces for large end flange in pattern, take the spaces shown on profile J in elevation.



G. L. GRAY.

Gossip of the Canadian Trade

A. G. McDonald & Co., electricians, Winnipeg, have dissolved.

Royal Victoria Hospital Montreal, will have a water supply of its own, through an artesian well.

Crawford & Lappin, electric supply dealers at St. Catharines have sold their business to E. Barrett.

Chas. D. Charles, of Toronto, is spending two weeks holidays at Louisville, Ky., and St. Louis, Mo.

Richard T. Kinsman, who had carried on a plumbing and tinsmith business in Halifax for many years, is dead.

John Cooney, formerly with Bennett & Wright, Toronto, has secured a position with Randall & Bell, Winnipeg.

The Amasa Wood Hospital at St. Thomas are putting in four new bath rooms. E. B. Dixon secured the contract.

The lighting fixtures for the Toronto public bath house will be furnished by the Keith & Fitzsimmons Co., at a cost of $315.

John Watson & Co., plumbers, Westmount (Montreal) have dissolved; and John Watson has registered as entering business alone.

C. R. Bowers, Chatham, was recently awarded the tender for new plumbing fixtures in the fire hall there, the contract price being $225.

A new plumbing firm has been established in Welland, in the name of Long & Co., by James Long and William Boyd, late of Blair's plumbing shop.

W. A. McKay & Co., of Sydney, N.S., have secured the contract for the electric installation of the new Government museum building at St. John's, Nfld.

A. A. Earl, Toronto, has moved his plumbing business from 1099 Queen Street West, to 1100 Bloor Street West. He hit the old number pretty c'ose.

The new Verdun pumping and filtration system, B.C., erected at a cost of $55,00 by the town, was officially taken over from the contractors last week.

For the sanitarium at Winnipeg, which is to cost $50,000, the contract for the building was given to William Bell, Brandon, while Gates & Sons, Winnipeg, will do the plumbing and heating.

John McLaren who is widely known among the plumbing trade, having for several years travelled out of London and Galt, has assumed the management of the Canadian Brass Mfg. Co., Galt, Ont.

Notice is given that the partnership subsisting between J. H. McCorkindale and Johnston Hall as hardware merchants, tinsmiths and plumbers at Owen Sound has been dissolved by mutual consent.

L. L. Anthes, of the Toronto Foundry Co., Toronto, presided over the big convention of the American Foundrymen's Association at Cincinnati a fortnight ago. He is now past president of the association.

Philip Gies, Berlin, has disposed of a part interest in his plumbing business to Durst & Hollinger, to the manufacturing interests and has purchased the Canadian Leather Co's plant and business and is now in possession.

W. Hungerford, who secured the contract to install a heating system in the Lindasy court house has begun work. Men are taking out the old furnace, and placing things in shape for the installation of the steam heating.

Representatives of the Standard Sanitary Manufacturing Co., Pittsburg, are expected in Toronto on June 21, when it is probable that an announcement will be made regarding the location of the company's news Canadian plant.

The Plumbing and Drainage Department of the Medical Health Office at Toronto, issued 624 permits during the month of May, making 2,142 since January1, or an increase of 38 per cent. over the same period last year.

The Electric Supply Co., Dundas, has just completed the addition to their premises, whereby their floor space has been doubled. The company have lighting contracts for the Carnegie Library and Aged People's Home in Dundas.

E. M. Lapierre, hardwareman, Buckingham, Que., has added a plumbing and steamfitting department supply and repair department to his store. The new department will be managed by Thos. P. Bayliss, a practical plumber and steamfitter.

All the municipalities near Winnipeg are now taking up the question of sanitation in the communities just without the city limits. Some are passing by-laws, and it is expected that all will do so, requiring thorough scavenging and the construction of pit closets.

W. J. Fulton, of the Dominion Radiator Co., Winnipeg, returned recently from a trip through the West. Mr. Fulton was very much impressed with the high quality of plumbing and heating work being done, and also the extensiveness of the trade in the towns and cities of this country.

On June 8 while the employees of John Burns and Co., Montreal, were loading some iron piping and fittings on their express waggon, and while the men were in the shop getting the material required for the job, thieves came along and carried away a plumber's pipe bench, weighing nearly 100 pounds.

F. Holland, of the Holland Radiator Co., Chicago, is negotiating for a site at Port Arthur for a factory for manufacturing radiators from iron from the Atikokan blast furnaces. He asks for certain concessions from the city, including a site or something similarly substantial.

T. Holland, of the Holland Radiator Co., Chicago, has purchased a patent dealing with an improvement on hot water boilers from A. C. Waltz, Port Arthur. Mr. Holland has made a proposition to the Port Arthur council and if it is acted upon favorably will go ahead with the proposed branch radiator plant at Port Arthur.

K. J. Allison is instaling the plumbing and the James Robertson Co. the marble work in the new public laundry and bath house at Toronto. Although the opening of this public bath is set down for July 1, it will not be ready before August 1, if even then. The J. L. Mott Co., New York are supplying the laundry tubs and closets.

An appropriation for the construction of two new convenience stations has passed the Toronto city council. These stations will be built this season, though their location has not yet been decided upon. It is said however, that they will be located at Queen St. and Broadview Ave. in the east end, and Queen St. and Roncesvalles Ave. in the west end.

The Labatt Mfg. Co., London, who recently sold their supply business at Toronto to W. A. Porter, manager of the Standard Sanitary Manufacturing Co., are now offering their brass manufacturing plant and supply business at London for sale. The factory outfit of patterns, machinery, tools, etc., is advertised as modern and the opening is considered an excellent one.

The boiler room of the Sanitary Plumbing Mfg. Co., Granby, Que., caught fire recently and the flames spread to the brass foundry. The damage was estimated at about $2,000; but besides this, it will delay completing contracts for a month. A few days later, the fire which had probably been smouldering in the sawdust, broke out again. The fire brigade, however, extinguished the fire in a few minutes.

Startling details of the pollution of Montreal's water supply, showing that living bacteria—originated by the sewage from Ottawa, Hull and Hawkesbury, thrown into the flowing river—is still in full activity by the time it reaches Montreal, when it is taken in with the water for drinking purposes, was furnished by Professor Harrison, professor of Bacteriology, at the Macdonald College, St. Anne's in a paper he read before the Royal Society of Canada at Ottawa.

A longstanding need is to be satisfied this summer in Winnipeg. The city engineer department are preparing to have about ten sanitary drinking fountains placed on the streets and public places in the city. They are also arranging to have horse troughs placed on convenient corners. Referring to these improvements, Mr. Smith, city plumbing inspector, said: "The bubb'e fountains will be the best that can be had and care will be taken to have them located in the most convenient places. The horse troughs will be of the most modern manufacture, and the flow will be arranged so as to keep the water pure and fresh, and horsemen need not fear that germs of contagion will loiter about the troughs."

Owing to the delay in the building operations on account of the late opening of spring Winnipeg plumbers have not been very busy. Many contracts have been let and it is assured that there will be an enormous rush to fill them later in the season. According to the number of building permits issued, a prominent plumber stated that there would be enough work for the next two years for every plumber and steamfitter in the city. As a consequence the trade presents a very bright future. Among a number of important contracts recently let for plumbing and steam heating are, the Winnipeg Sanitarium and the Canada Permanent building to C. Gate and Son; the Bank of Nova Scotia to John Plaxton; The Fort Garry Depot to James Ballantyne & Co.; Grand Trunk Pacific shop to Cotter Bros., a forty-one suite apartment block (Casa-Loma) to D. J. Wallace.

BETTER SANITATION AT WINNIPEG.

The Sanitary Association at Winnipeg, met May 11 and compiled the following memorandum with reference to the rivers, nuisance grounds and black smoke, and submitted the same to the civic board of health.

It is recommended that you use your influence to obtain septic tanks at the end of all sewers discharging into the Assiniboine river and of sufficient size to treat the dry weather sewage on this principle, so that only clear liquid will be discharged into the river and to be used until such time as the city council will separate the house sewage from the surface water and treat the whole of the sewage, north of the city before it is discharged into the Red River. The association is informed that the authorities at the Agricultural College, discharges the sewage of that large establishment direct into the river. We think that the sewage should be put through tanks and filter beds to purify it before it is discharged into the river, and we beg to ask your influence in support of this proposition.

Other clauses dealt with the disposal of garbage by furnaces and the elimination of the smoke evil by compelling factories to instal smoke consumers.

In acknowledgment of this the health department has notified this association that nothing can be done at present, and that the communication has been filed. The Sanitary Association are not satisfied with the recognition they have received, in this and other matters. The majority of the members, however, are of the opinion that on account of the heavy expenditures in other civic improvements the council have been compelled to make retrenchments, and that improvements such as they proposed will in due time be more seriously considered.

When the regulations were approved by the city council several weeks ago for the improvement of the laundries. It was expected that several Chinese laundries would be closed at the end of the license year on May 31, owing to the drastic nature of the new rules. It has been found, however, that the Celestials became alarmed and are willing to make extensive changes in their establishments, so that they may secure licenses. Letters have been received from San Diego, California, and from Ottawa asking for copies of the laundry regulations.

NO RACE SUICIDE HERE.

While plumbers are not noted as exponents of race suicide and the wife of a master plumber or supply man is seldom seen taking her pug dog family out for an airing, there are few who can boast of two pairs of twins and four singles as is the proud showing of the Toronto supply man who is pictured with his wife and children in the accompanying illustration. The editor of the Plumber and Steamfitter secured the photo from the happy father's desk and reproduces it as a challenge to readers of Plumber and Steamfitter to beat this record if they can.

The two pairs of twins are in front of and on either side of the supply man and they as well as the others in the group look like the large happy families our grandmothers used to have before the more modern ideas regarding American families became prevalent.

A TORONTO PLUMBING SUPPLY MAN'S FAMILY.

Two Pair of Twins and Four Children Who Came Singly. Here's a Record for Other Men in the Trade to Beat.

Writing of family matters brings to mind the recent experiences of the wife of a Toronto master plumber. She was coming down town on a street car with her baby and when the conductor asked her for her fare she handed him a $5 bill.

"Is that the smallest you have, madam?" queried the conductor, fearing stringency in change, he having changed several large bills already that morning.

The woman looked at the conductor and then at her baby and made this surprising reply: "Yes, I have been married only twelve months."

New Buildings, Water and Sewerage Systems

Municipal Undertakings.

Galt & Smith, Toronto, have been engaged to report on a sewage disposal scheme for Nanton, Alta.

The Barrie Council have reported in favor of submitting a by-law to raise $30,000 for sidewalks and sewers.

By a majority of 84 the by-law to raise $20,000 for a system of waterworks at Gravenhurst was carried.

The Provincial Government and the G.T.P. are arranging to instal a new waterwork ssystem at Prince Rupert.

In extensions to the Victoria waterworks $125,000 will be spent, and on additions to the sewage system $45,000.

The by-law to raise $25,000 to repair and complete the Carman, Man., waterworks system was carried bv a large majority.

The tenders for the erection of the sewage disposal tanks, at St. Thomas, were opened last week and the contract awarded to S. S. Harper, for $13,490.

Two drinking fountains which were placed in the streets at Saskatoon are being connected up with the city water supply and will be in operation shortly.

In the municipality of Oak Bay, the by-law to raise $30,000 to provide for the laying down of a water distribution system was passed by 66 to 1. Work is to commence at once. A meeting is to be held to arrange for the ordering of the pipe, a preference being given to English pipe.

With large sewer propositions on hand the city this year will pay considerably more for pipe for this purpose. The increase runs from half a cent a foot in the smallest size to about 40 per cent. in the largest. The contractors this year are Evans, Coleman & Evans, of this city, who have filled this order for some years. There has been delay in getting pipe from the Victoria factory, and this year it will be secured wherever it can be obtained. A local company is being organized to develop clay beds up the Fraser river.

General Building Notes.

Morgan Harris will build a residence at Brantford.

F. P. Starr is building a $10,000 residence at St. John.

H. R. Dudley Smith will build a $2,350 residence at Calgary.

B. G. Killoran will erect a $10,000 business block at Haileybury.

Johnson Bros., Brandon, will build a new restaurant at a cost of $10,000.

The Atlantic Hotel at Vancouver is being re-modelled at a cost of $5,000.

P. Burns, Calgary, is having erected a large brick and stone business block.

Finch & Finch, Victoria, will erect a four storey block at a cost of $15,000.

D. D. Hutchinson will erect at Vancouver, a $60,000 store and office building.

Funds are being raised for the erection of a new Y.M.C.A. building at Oshawa.

It is stated that a contract has been let for a $15,000 hotel at St. Lambert, Quebec.

C. M. Cookson has secured a site for the erection of a business building at Victoria.

The Yorkton Storage and Forwarding Co. will erect a distributing warehouse at Yorkton.

J. Noel, Saskatoon, will build a house on 10th Street. Tenders are now being called for.

The new Y. M. C. A. building proposed to be erected at Toronto is estimated to cost $400,000.

The Imperial Bank will shortly start upon the construction of a new building at Fernie, B.C.

Schultz Bros. Co., Brantford, announce that they will erect a three-storey building.

Bert A. Stringer has been granted a permit to build a $4,000 residence on American Hill.

The Pacific Fish Co. are erecting a number of warehouses on Queen Charlotte Island, B.C.

Massey-Harris Co.. have taken out a building permit for a new warehouse at Brantford, to cost $14,500.

McKee & Weir have a permit for the erection of three brick veneer dwellings, at Peterboro, to cost $4,500.

Tenders are being called for the Union Bank Building to be erected at Saskatoon. The building will be two storeys.

Geo. Stevens will erect a new brick block at Galt to replace the frame building which was badly damaged by fire on May 24.

The tender of Sam Brown, of Winnipeg, has been accepted for the building of the Saskatoon branch of the Bank of Montreal.

Excavation has begun for a large business block at Calgary. J. S. Mackie is the builder and the cost will be in the neighborhood of $40,000.

Permits for dwellings have been issued at Oak Bay, B.C., to the following: D. R. Elcorn, $2,500; M. Carlin, $2,950; M. Carlin, $2,950.

Besides new buildings in Montreal and Westmount, the Y. M. C. A. propose erecting a $50 000 branch structure in the northeastern section of Montreal.

Contractor Grant, of Winnipeg, will shortly begin the erection of an apartment block, near the Parliament Buildings, at Edmonton, at a cost of $150 000.

Contracts for the new phone building at St. Thomas have been let and work will be pushed rapidly. It is expected that the building will be ready by Aug. 1.

The Bank of British North America are making very extensive improvements to their present building at Calgary. The alterations call for an expenditure of $30,000.

Eustace G. Bird, Toronto, has awarded to Nucross Bros., Boston, Mass., the general contract for a new bank building for the Royal Bank at Winnipeg. Approximate cost $200,000.

There is a building boom on at Campbellton, N.B., one builder reports that he has 18 applications for cottages. A similar boom is on in Fredericton, and to a still greater extent in Moncton.

The Carter-Halls-Aldinger Co. have been awarded the contract for the twelve storey office block to be erected at Winnipeg by J. D. McArthur. The contract price is stated to be $250,000.

Wm. Wartley has been awarded the contract for building the Agnew Bros, block at Saskatoon. The price is in the neighborhood of $35,000. Work will begin at once and the building pushed to completion.

The G. F. & J. Galt Co., Calgary, purchased property on which is to be erected a warehouse five storeys high, with basement, and the foundation built to carry the building up three storeys higher when necessary.

Another big contract let at Saskatoon is for the erection of an implement warehouse for the International Harvester Co. Carter, Halls and Aldinger, of Winnipeg, were the successful tenders. The price given is $75,000.

There is at least $120,000 worth of building either well under way or clearly in sight at Guelph. The total is built up a good deal by the new Winter Fair extension at a cost of $40,000, and the new St. James Ward school at a cost of $20,000.

The C.P.R. Co. is spending between $35,000 and $40,000 this spring in improvements at Caledonia Springs. A plunge bath is just being completed, at a cost of $5,000. The latter is 49 ft. by 18 ft., and is white tiled, with commodious dressing rooms, etc.

The permit for the "Chateau Laurier," the Grand Trunk Hotel, at Ottawa

has been taken out, and the estimated cost is $864,000. Another Ottawa permit for $10,000 was issued for alterations to the old Y.M.C.A. building, converting it into a warehouse.

The Victoria Y.M.C.A. are calling for competitive plans for their new building, to cost $70 000 or thereabout. The competition opens at once and closes on the 30th of June. The $70,000 includes plumbing, heating lighting, swimming tank, etc.

Among business blocks to be built at Victoria is a fine one for Dr. E. Hall. The building will be modern througout, three storeys in height and will be mostly used for offices. One of the others is a large addition to the present Dominion Hotel. The additions planned are for four storeys. Baths are to be put in every room.

The following are recent permits issued at Montreal:Mrs. John Trottier, five dwellings, $10,000; Mrs. R. Prefontaine, detached house, $7,000; J. L. Primeau, three dwellings, $3,800; A. Gravel five dwellings, $3,000; L. Sauve, six dwellings, $4,000; P. J. Dumont & Co., four dwellings, $4,000; G. W. Faust, three dwellings, $4,000.

Among the building permits issued recently at Edmonton, Alta., the following:—apartment house for Rene LeMarchand, $140,000; residence for T. M. Grindley, $8,250; residence for G. H. Spiers, $5,000; rooming house for F. Horn, $4,000; warehouse for Royal Fruit Co., $22,000; store and office building for C. F. Hellwig, $5,000; store for J. R. Umbach, $4,800; store and office building for J. Kenwood, $20,000.

Public Buildings.

The C.P.R. are planning additions to the depot in Brandon. Estimated cost, $10,000.

The erection of a new school to cost $15,000 is under consideration at Hanley, Sask.

The Hindus of Victoria hope to begin the construction of their temple in a few weeks.

A by-law for the erection of a collegiate institute at a cost of $125 000, carried by a large majority at Saskatoon.

A new Roman Catholic church is about to be erected in Millerton, N. B., as well as a number of dwelling houses.

The Free Methodists, of Peterboro, have purchased a site on which they will erect a church in the near future.

The contract for building the new court house at Woodstock, N.B., has been awarded to R. A. Corbett, of St. John.

Bennet and Vymburger, Haldimand, secured the contract for the erection of the Haldimand House of Refuge, at $20,768.

The Alberta Government will start work immediately on the new telephone exchange at Lethbridge. A two-storey building will be erected.

A new school-house to cost $40,000, is being built at Newcastle. Also an annex to St. James' Presbyterian church, to cost about $3,000.

The Belleville city council have been asked by the Board of Education to submit a by-law to the ratepayers for the issuing of $70,000 by debentures for the erection of new school buildings.

An extension of time to June 21 is given for tenders for the Grace Methodist Church St. Thomas. The plans call for a building to cost about $35,000. L. Wilson, Son & Arnold, of Chatham, are the architects.

A special meeting of the Victoria school board was held lately when the the type of heating apparatus to be installed in the new $63,000 school was considered. The Buffalo Forge Co., Montreal will be asked to supply a figure for which the steam blower system can be installed.

NOVEL BUSINESS CARDS.

The following advice is given on a business card, issued by a western furnace man and tinsmith. On the face of his business card containing this information is the injunction to look on the other side:

Don't connect your furnace to a poor chimney.

Don't install your furnace in less than a 7-ft. cellar—better 8.

Don't let your ash pit fill with ashes or you will burn your grates.

Don't blame your furnace if your grates burn out; blame yourself.

Don't condemn your furnace until you have consulted your furnaceman. If he knows his biz he will either make it work or tell you the reason why.

Don't listen to every little breeze that comes along. Consult the man that makes a specialty of furnace work, same as you would your physician in sickness.

Don't think because it looks like a furnace it is. There are some "would-be's," some "has beens," some "never will be's," some "never should be's," and lots of good ones.

Don't take anything but the best. Price is a small item in comparison to comfort derived from the best.

CHIMNEYS AND FLUES

The construction of chimneys and fireplaces has a great deal to do with their successful operation. The chimney should run tothe ground in order to have a good footing. Under the fireplace, in the basement, an ashpit can be provided to take care of the ashes dropped from above. Flues should have cleanouts. The hearth should be well supported—generally by a 4-in. brick arch. The walls of fire flues should be 6 in. thick at least. In order to make such a flue absolutely safe it should have a 4-in. wall lined with 2 in. of brick on end, thus breaking the joint, but a 4-in. wall with a lining of hard burned tile would be equally good. The minimum size for good fire flues is 8 x 8 in., and flues for fireplaces, furnaces, etc., really should be 8 x 12 in. in size. They should be of the same size from top to bottom, and they ought to run as straight as an arrow. If breaks are necessary, abrupt turns and angles must be avoided, otherwise the smoke will not rise properly. Smoke goes out of a chimney when it is given a chance to do so, but it has a natural aversion to dodging around corners and knocking obstacles out of its path. Fireplaces sometimes smoke because the arch is too thick; it should not be over 4 in. in depth.

UTILITY TAP AND VALVE SEATER.

R. J. Parkes, of 2 Church street, Southport, England, has patented and put on the market a tool which will be found extremely useful to all who are concerned in the maintenance or the efficiency of water taps. Hitherto there has been a difficulty in re-seating a worn tap, mainly on account of the revolving cutter employed not being kept in the horizontal plane, but in the tool under notice this is done by a couple of very effective clamps working on the under side of the flange, while truly turned rings on a vertical spindle engage on the inner diameter of the tap. These are of ⅜, ½, and ¾ in. taps. Should the tap not be provided with a flange a steel chain with a screwed hook supplies the deficiency. The method of employment is to remove the upper portion of the tap and the valve, insert the cutting end of the tool with the proper sized cutter attached, clamp to the flange by the side screws, feed down with the large screw at the head, and then turn the crutch handle a few times, the result being that the seat or tap will be levelled dead true. After this the valve is replaced and the upper part of the tap put into position again.

NOVEL PUNISHMENT.

Suspending a plumbing firm from business for a period of three days is the penalty meted out by the Board of Health of Sacramento, Cal., on the basis of charges that the concern repeatedly failed to comply with the rules that plans of plumbing work should be filed with the plumbing inspector.

Monel Metal: A New Copper and Nickel Alloy

A Brief Description of the Properties of this Metal—Interesting as to its Possibilities in the Future of Engineering and for the Manufacture of Plumbing Supplies—First Found in Canada—Results of Tests.

A new alloy in the metal world is known as Monel metal, which is a natural alloy of nickel and copper. This metal was first found in Canada, having been discovered nearly four years ago by the Canadian Copper Co.'s metallurgists while endeavoring to avoid the necessity of separating the nickel from the copper as found in the ores of their Sudbury mines.

The metallurgists found that the alloy obtained by reducing these two metals together, merely removing the iron, sulphur and gangue matter from the ore, possessed many valuable properties, having the strength of steel with greater ductility, and the freedom from corrosion of nickel itself.

Fig. 1.—Cast Metal 15 Diams.

Fig. 2.—Light and Dark Parts Show Size of Crystalline Grains.

Fig. 3.—75 Diams, Rolled, Etched Light.

Monel metal, which was named after Ambrose Monel, president of the International Nickel Co., is a combination of nickel and copper in proportions, very approximately as they occur in the ores. These proportions are 68 to 72 per cent. nickel to 25 to 29 per cent. copper. The cent. and slight traces of sulphur and alloy contains a little iron, about 2 per carbon. It is easily rolled at temperatures of from 900 degrees to 1,200 degrees C. and can be finished hard or soft similar to sheet copper. B. & S. H. Thompson, Montreal, are Canadian agents.

Monel Easily Polished.

In appearance the metal is silver-white and is easily polished to a high finish which finish will remain almost indefinitely. Its non-corrodibility has been demonstrated by a 56-day test with 40 degrees of sulphuric acid, which produced no loss whatever.

The metal may be as easily drawn and cast as it is rolled and among the possible uses of the hot-rolled, appear such as roofing, ventilators, smoke stacks, ship plates, etc., the cold rolled sheets being used in making hospital equipment, watch cases, knives, forks, spoons, and similar articles.

For castings which are subject to severe strain or shock, it is admirably suited, as has been demonstrated by its use in making propeller wheels, cast solid hub and arms.

When drawn into wire or rolled into bars it is adaptable to valve- stems, shafts, piston rods, resistance wire, rustless screens, screws, rivets, etc. When made into bolts it is better than steel for the reason that on a bolt of Monel metal the threads are very much less liable to strip. Monel bolts, half-inch diameter, are 30 to 35 per cent. stronger than steel bolts of the same size.

Suitable for Plumbing Supplies.

The new metal is being made in sheets by the American Sheet & Tin Plate Company, to be used largely by sheet metal workers, and it has also been subjected to practical tests for the construction of range boilers and sinks. The metal has many excellent qualifications for this purpose. It has much greater tensile strength than copper, consequently boilers of the same thickness of metal may be subjected to a much greater hydraulic pressure with safety. It is possible also for it to be drawn into shapes such as boiler heads and pantry sinks.

An important feature of the metal is that having so large a constituent of nickel it can be polished to have the same bright surface found in nickel plated articles without the expense of nickel plating. This adapts it admirably to boiler and sink construction, as well as to bar fixtures, and, being a harder metal, it is capable of standing rougher usage without showing dents, and promises to wear longer. Being of the same material all the way through it can be kept polished as long as it lasts.

Stronger than Steel.

The accompanying illustrations are exact size reproductions of micro-photographs of the cross section of pieces of cast and rolled Monel metal. Figs. 1 and 2 are of the same cross-section, but in Fig. 1 the light is directly on the section while in Fig. 2 the illumination is at an angle. The light and dark patches show the size of the crystalline grains. Figs. 1 and 2 are magnified 15 diameters. Fig. 3 is a micro-photograph of the cross section of a rolled specimen magnified 75 diameters and etched lightly.

In working the metal in a lathe or similar machine it gives as satisfactory results as does mild steel without chattering. As the metal draws perfectly into a smooth tube it is very well adapted to use in condensers and flash boilers such as are used on automobiles and in motor boats. Experiments and tests are now under way to determine the physical constants of the metal, its electrical qualities and the effect produced by varying amounts of iron, silicon, carbon and copper.

PLUMBING AND HEATING MARKETS

MONTREAL.

June 14.—A marked improvement has occurred in plumbing and heating lines. Jobbers report orders swinging in very freely, and there is a bright feeling to trade generally. As their work increases, plumbers are buying in larger quantities, and the whole movement looks to be culminating into very heavy business later on. The building season has opened out well, and architects report plenty of plans on hand for building right up to the fall. Not many large structures are in contemplation in the city, but there is a fine run on houses and flats. Country reports are also very encouraging, and it is very evident that plumbers have a busy season before them.

All lines have a spurt, especially soil and iron pipe. No important changes in prices are announced. The markets are firm with an advancing tendency, generally speaking. Supplies are in good shape, and there is nothing to interfere with a healthy business movement.

Jobbing work has been good especially in the country. Summer residences have been put in order, and on the whole plumbers have been pretty busy. Fresh jobs are coming along freely, and when the building season is in full swing there will be plenty of work offering.

SOIL PIPE.—There is a distinct improvement in soil pipe. Good orders have come in from the country, while the city trade has shown big strides. There are no changes in prices, the market being firm with a good tone, we quote: Light, 3 to 6 in., 60 off; medium to heavy, 2 to 6 in., 70 off; 8 in., heavy, 40 off.

LEAD PIPE.—Lead pipe has developed into a very active seller. Individual orders are much heavier than they were, as many are stocking up a little in view of the firmness of the markets. No changes in prices are announced, and we quote: Pipe and waste at 27½ off; traps and bends at 50; calking lead at 5c per pound.

SOLDER.—The heavy jobbing work has created a good demand for solder, and orders have come in freely from all points. With the busy roofing season approaching solder should be in most active demand. The market is firm and unchanged, and we quote 19½ for half-and- half, and 18½ for wiping.

IRON PIPE.—Iron pipe has shown very good movement and jobbers are satisfied with the way trade is shaping. More stocking is being done, while with the extending use of iron pipe there is an increased call from all sides. No change in prices is announced, and we quote: Discounts, ¾-in. to 4-in., black, 72½ off; galvanized, 62½ off.

RADIATORS AND BOILERS—Business has improved, and prospects look very healthy. Good delivery has been going on, while bookings show much better strength. We continue to quote: Radiators and boilers at 60 off; steam fittings about 70.

BRASS GOODS.—The market is firmer, and prospects are for an advance in price on all good lines. The demand shows marked improvement, and there is now a strong tendency to favor the better grades instead of the cheap articles that are on the market. We continue to quote: Compression work high grade, 60 and 10 off; standard, 70; fuller 75 off.

ENAMELWARE.—The demand is very healthy, and promises well for the fututre. Stocks in jobbers' hands are not over full, so manufacturers will have to keep up the present pressure in their factories. Prices are now firm on all lines.

METALS.—The tone of the metal market has been much stronger, although no important change is announcer. Speculation has been very rife, due to the more confident feeling as to the future. We quote: Ingot copper, 14¼c; ingot tin, 32½c; lead, $3.65; pig iron, Middlesboro No. 3, $16,50 to $16.75; Summerlee, $18.75. Heavy scrap red brass is 10c; light copper 10c; heavy lead, 2¾c.

TORONTO.

June 14.—Without there being any decided rush the plumbing business is at present in a good position. The supply houses while they could take care of more orders are of the opinion that the passing trade is satisfactory. Master plumbers are busy, the older houses having enough work on hand just now to keep their men employed for two months. The great expansion in building has helped all plumbers, and the demand for pipe so far this season has been up to expectations.

Enamelware enquiries are increasing and a greater proportion of high grade goods are asked for than was the case a year ago. Prices are holding firm and in some cases advances are reported. Flat rim enamel sinks have gone back to their old prices, and so have low down closet combinations, the latter now being quoted at uniform prices for grades.

IRON PIPE AND FITTINGS.—The demand this season has been fully up to what was expected, and present trading is good. Considering the amount of pipe going out prices are low. This is due somewhat to the low figures asked for pipe coming in from across the border. The industrial situation in the U.S. is now showing improvement and prices there are going higher, so that in the near future the cut prices now quoted on some pipe may be expected to be eliminated. The market quotation for 1-inch black pipe is $4.54, and for 1-inch galvanized $6.19. Malleable fittings are at 40 and cast iron fittings at 70 per cent.

ENAMELWARE.—Inquiry increases and indeed some good sales have been made. These inquiries and sales have been for the better grades of goods. The summer season will probably see some fine business transacted in the enamelware lines. Prices on all lines are firmer Flat rim sinks have advanced to their former quotations; 16x24 are now $2; 18x30 are $2.35; and 18x36, $3.50. Low down closet combinations, too, have advanced, and the quotations for grades are more uniform. The ruling prices are now $14.50, $15, and $16. Roll rim sinks are still at $7.85, the higher quoted a fortnight ago.

HEATING LINES.—The shipment of these goods is opening up and with each succeeding day calls for delivery increase. Boilers and radiators are active. Prices are yet at the low figures prevailing for some little time past.

BRASS GOODS.—The demand is slowly increasing for brass lines. Prices are unchanged, though in some cases the discounts have been altered slightly—up and down being about equal. An advance is thought to be ahead for fall prices.

SOIL PIPE.—Sales are now steady. While orders are as frequent as earlier in the season they call for smaller quantities. The actual trading, however, is satisfactory.

LEAD PIPE.—As with soil pipe so with this line. Sales are fair only.

SOLDER.—No price changes are noted. Half-and-half is 19c and wiping 18½c. Trading is fine.

SUMMER CARE OF HEATING PLANTS.

Many master plumbers in the United States are distributing cards containing the following advice compiled for the benefits of house owners by Domestic Engineering.

All boilers, cast iron or steel, water or steam, should have the water removed which was in use during the winter season, and the system filled with fresh water up to a point where the mains and lateral branches are full. The pipes above the cellar floor and radiation in the rooms will soon dry in the interior, so there is no necessity of filling them with water, for they will not rust while dry.

In boilers with hand-hole plates or boilers of which the interiors can be cleaned in any way, it is well to wash

them out thoroughly before refilling with cold water.

The deterioration of heating boilers that takes place in the summer months is due, to a large extent, to sulphur contained in the soot, particularly if soft coal has been used as fuel. The water in the atmosphere condenses on the cold plates of the boiler and moistens the soot, forming in combination a substance that attacks the plates and destroys them very rapidly. Therefore great care should be exercised in removing all particles of soot from all parts of the boiler where it has adhered.

Spray all the flue surfaces with kerosene oil, or crude oil. This prevents rusting.

Leave the feed, ash, and clean-out doors open.

Take down the smoke pipe, clean it carefully, and leave it down until fall.

Remove all ashes and clinkers from grate bars and ash pit.

Paint outside surfaces with heat proof black enamel, made for the purpose.

CLEVELAND'S NEW PLUMBING LAW.

At last the Cleveland Plumbing Code has passed the city council and been signed by the mayor and by July 1 will be in effect. For years the fight has been on and it was impossible to bring the various factions together. Last fall the ordinance was again introduced in council and referred to a special committee. Many public meetings were held. As a final means of agreement on the various sections of the code a joint committee representing the Master Plumbers' Association, the Journeyman Plumbers' Association, the Architects the Builders' Exchange, the Board of Education and the Chamber of Commerce was appointed to report to the committee of the City Council.

After many weeks an agreement was reached and the ordinance was passed with only three negative votes. The main point of disagreement which has delayed the passage of this code for several years was on the latrines. The code as passed allows the use of latrines in factories, foundries and school buildings. The City Council has made an appropriation for the publishing of a limited number of copies of the new code, which will be distributed through the office of Building Inspector W. S. Lougee,

NEW SUPPLY HOUSE AT TORONTO.

There is considerable talk about the possibility of a new supply house with strong backing being established at Toronto. One manufacturer states that he has been approached for supplies but beyond saying that the parties behind the proposal are men of means he stated that he was not at liberty to give out any information.

Condensed or "Want" Ads.

BOOKS FOR PLUMBERS.

PRACTICAL HINTS ON JOINT WIPING, for beginners in plumbing.—This book contains two original articles on joint wiping by experts, together with a selection of letters and articles on various important phases of the subject. 66 pages, 41 illustrations. Price 25c.

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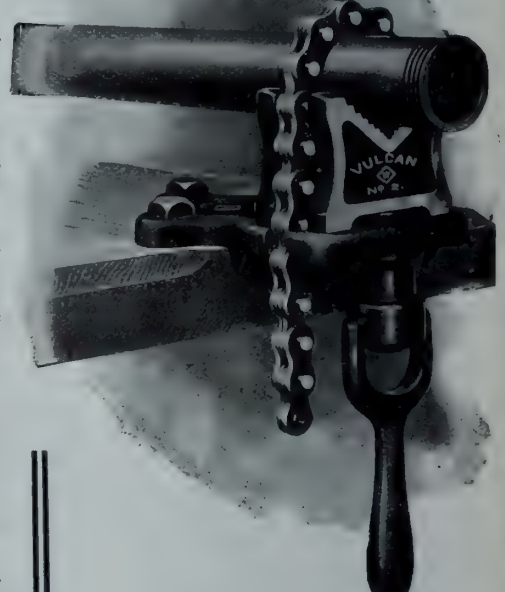

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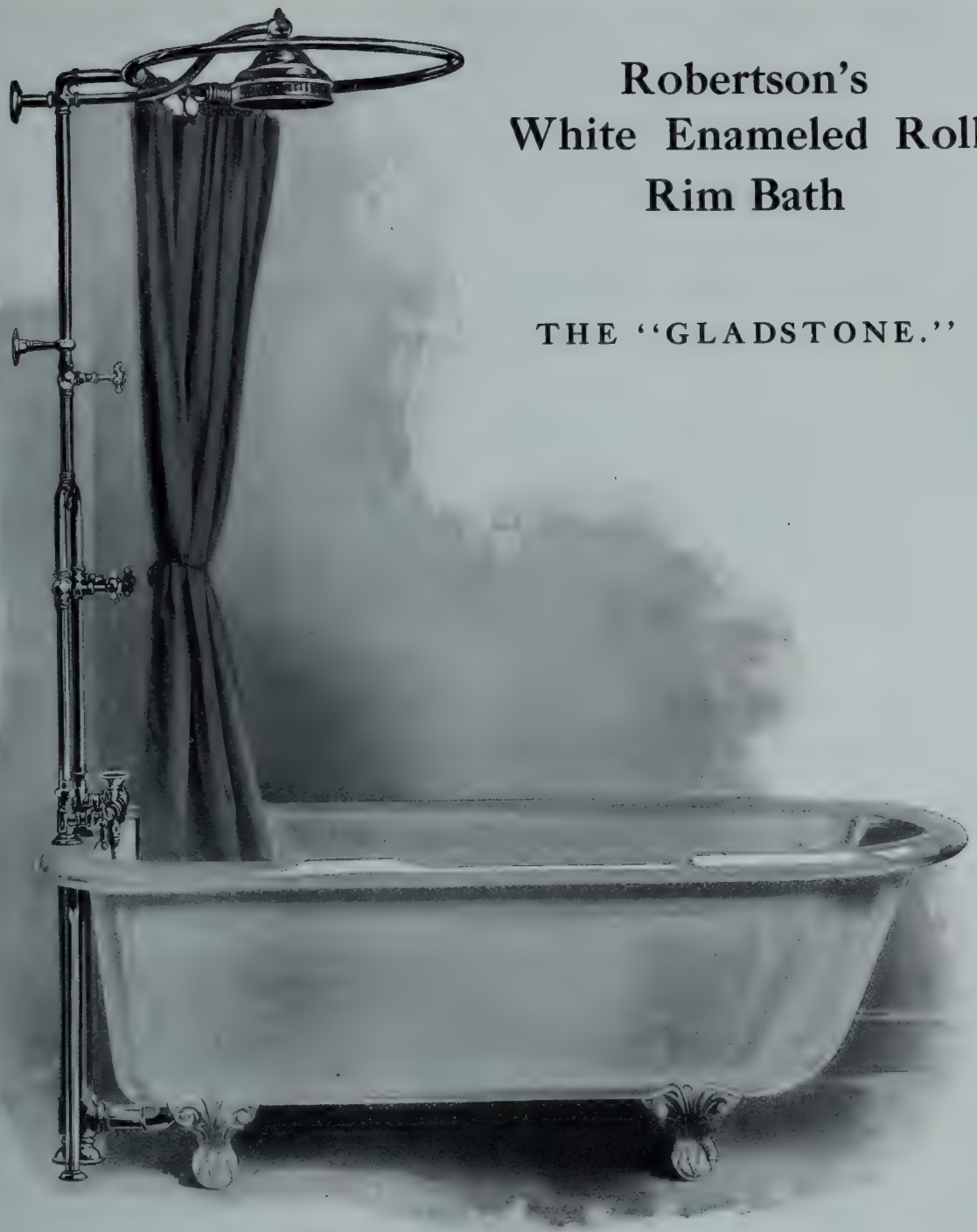

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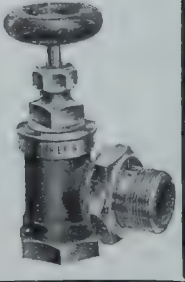

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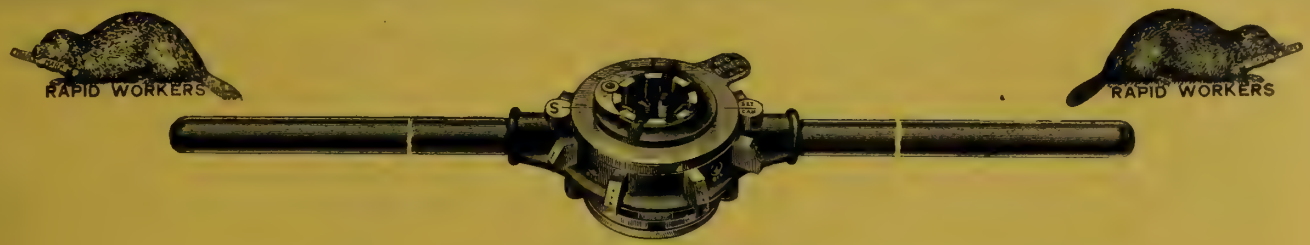

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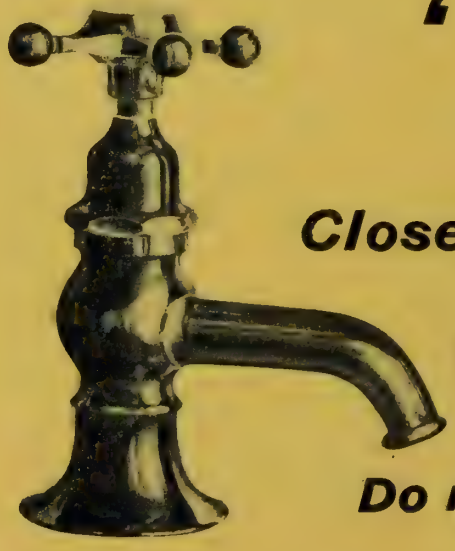

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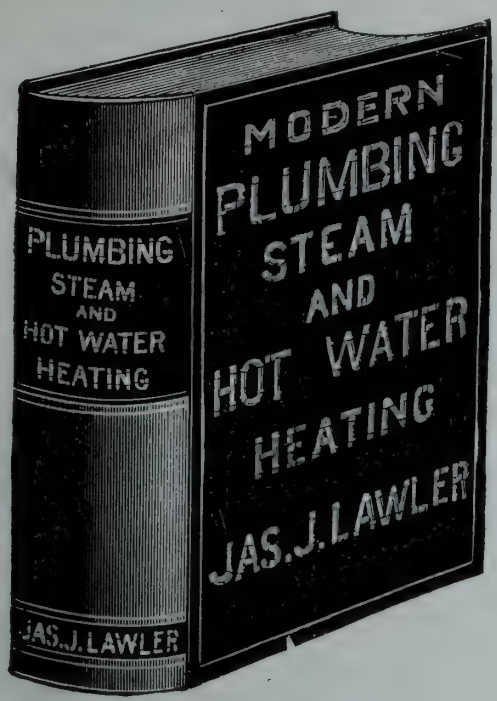

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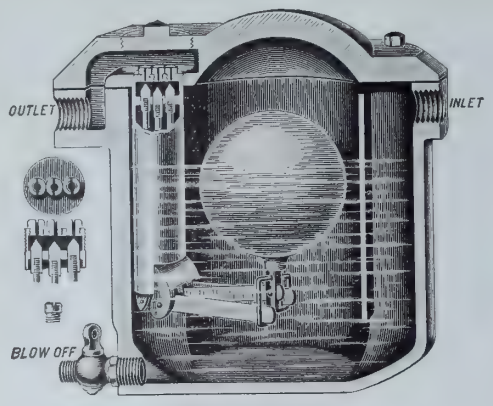

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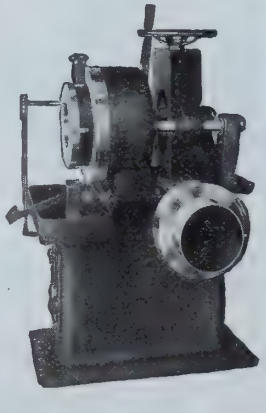

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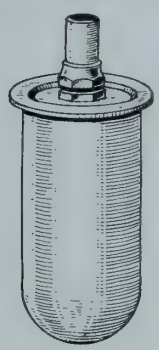
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TORONTO, JULY 1, 1909

THE COMING CONVENTION AT MONTREAL.

The following letter has been sent by Secretary Munday, to all officers of the National Master Plumbers' Association:—

"I am instructed to notify you that the meeting of the National Association of Master Plumbers of the Dominion of Canada, will be held in Montreal, Sept. 15 and 16, 1909.

"We would like you to make a special effort to attend this meeting. Also please notify your confreres of the same and advise me as soon as possible, about how many can come, so that all arrangements can be made."

As we have previously pointed out, these dates are in the "Back to Montreal" week. Most elaborate preparations are being made to celebrate the week in a handsome way. Something worth seeing will take place every day while an important point, which must not be overlooked, is that cheap railway rates will be in force. Plumbers will thus not only have a good opportunity of enjoying their own little celebration, but can take part in the more public ones that are being arranged. Such an exceptional chance like this occurs very seldom. Montreal with all its visitors will be worth seeing, and we advise every plumber to take this opportunity of visiting the convention and seeing the sights that are being arranged on no mean scale.

TWO SUCCESSFUL CONVENTIONS.

The twenty-first convention of the National Association of Master Steam and Hot Water Fitters, was held at Niagara Falls, N.Y., June 14 to 17, about 300 delegates being in attendance. On several occasions Canadians have attended as fraternal delegates, but the disorganized state of the trade on this side of the line prevented the sending of any representatives this year. The convention was successful from every standpoint and particularly so in having present for conference on trade standards a committee of the American Society of Heating and Ventilating Engineers. Besides this, the Boiler and Radiator Manufacturers' Association held a meeting at the Falls to discuss various matters with the master fitters, and the manufacturers of apparatus for vaccum heating systems, were also present to adjust matters which had caused annoyance.

The second convention was the Twenty-seventh gathering of the National Association of Master Plumbers, at Detroit, June 22 to 25, about 700 delegates attending, from thirty-one states. In addition to this two or three dozen manufacturers made exhibits, and fully as many ladies and salesmen were present as there were delegates. Five Canadians also attended the convention, although not in any official capacity. The convention was conducted in business-like style and the large attendance of delegates at each session testified to the interest taken in the proceedings. Many entertainment features were provided by the local committee, the fund for this purpose amounting to several thousand dollars, it being spent in entertaining the ladies in automobile drives and in boat trips, etc., for the delegates and visitors.

Many regrets were expressed at Detroit at the failure to arrange an Ontario convention at Windsor, during the Detroit gathering. Hopes were also expressed that the master plumbers throughout Canada will awake to their opportunity and make the convention at Montreal a starting point for a revival in trade organization in Canada. The benefits of associations have been amply proven to the master plumbers of the United States, who, it may be said, hold their conventions with open doors, and it is hard for them to realize the apathy of the master plumbers in Ontario in failing to grasp the opportunity of holding a meeting at Windsor under such favorable circumstances.

PRICE OF RADIATION ADVANCES.

After a long period of price-cutting the radiator and boiler manufacturers have come together and decided upon uniform prices. The advancing of raw material and the opening of a good demand made the present time a good one for some decisive action. We understand that at a recent meeting in Montreal, a definite agreement was drawn up regulating the prices, with Jenkins & Hardy, accountants, Toronto, acting as secretaries. The old discount on radiators and boilers of 60 off, has been changed to 50 and 10, and master fitters who have not specified their exact requirements for contracts in hand or have not actually taken goods ordered into stock, will have to pay the new price.

A plan providing for considerable economies in manufacturing boilers and radiators is now under consideration.

KEEP UP THE PRICE.

We would once more advise plumbers to keep up the price of their work. It can be done better now than at any other time of the year for the busy season is at hand, and if a plumber loses a job for refusing to cut he knows that another will be coming along the next day. Many masters argue that in these days of competition they must cut to live. We venture to doubt that statement. There are many cases where a plumber cuts a job simply because he is frightened into it by a customer who, as a matter of fact, never intended to go anywhere else. "Your price is too high," says the customer, "I have a lower figure from another man," and forthwith the plumber falls into the net and for fear of losing the work reconsiders his estimate. In all probability if he had declined to alter his figure on the grounds that good work could not be done at a lower figure he would have got the job. There is still a premium on good work and on a man's reputation, despite the universal cry of cheapness.

It must not be forgotten that one good contract at a fair profit is worth a hundred at a price that leaves no margin for the plumber. What is the use of having a number of men working in the shop, of carrying large quantities of material, of adding to the current expenses by extra lighting, wear and tear on shop tools, and so on, if there is no profit at the end. It would be better to be without the work, and certainly the plumber would have saved that amount of financing. Much better dismiss the men and do the fewer jobs coming along at a good profit yourself, than have a shop full of men working on cut contracts. It is not the amount of work that is done but the amount of profit at the end that determines the success of a plumber.

Let the cut jobs go to the man who cuts, and who will probably fail before the year is out. Stand up for a fair profit and base that argument upon the fact that good work and good material cannot be put in if the price is reduced. If plumbers would only get together, if they would only see that by cutting they are not only spoiling the chances of other men but spoiling their own, they would not be so keen to secure a job at any price. Deep in their hearts most people admire a man who sticks out for his price and will not be beaten down. They are not so carried away by the cry of cheapness that they do not recognise the doubtful connection between good work and low prices, and although there are some who would chance the risk for the sake of the money saved, there are many others who would cheerfully pay the price if the policy of the course was pointed out to them.

Let plumbers therefore try to abstain from price cutting this coming season. Do not be afraid to lose a job on the point of price. There are more jobs than one coming along, and the time and labor, not to say money, wasted over a contract that carries no profit with it, could be better employed in looking for work that would bear a margin.

IS THE JOBBER A BACK NUMBER?

One of the resolutions approved by the National Master Plumbers' Association Convention at Detroit, recommended "that master plumbers make purchases direct from the manufacturers and so avoid the expense which attends the profits which trading with jobbers and brokers entails and requesting makers to quote prices in accordance."

The resolution indicates that, to some extent at least, the jobber is losing his hold on the master plumbers in the United States—and the recent organization of a co-operative supply house at Port Arthur and Fort William makes it appear that a similar condition may develop in Canada if the supply houses do not do something to check the movement referred to.

That there is plenty of opportunity to do something is evident from the fact that the trade is badly disorganized, the master plumbers are doing business very unintelligently, taking work at prices which, roughly speaking, about equal the cost of the labor and material going into the job, and the supply men themselves complain that business is unprofitable, their losses are heavy and their margin of profit small.

The Plumber and Steamfitter is doing all it can to uplift the trade and better conditions not only for the master plumber but also for the supply house and the manufacturer. That the master plumbers appreciate what this paper is doing has been shown the publishers on numerous occasions and notably in the following resolution adopted at the national convention at Montreal, in August, 1908 :

> "Resolved, that this meeting of the National Association of Master Plumbers express its appreciation to The Plumber and Steamfitter of Canada for the numerous articles it has published aiming to extend the influence of our Association and to educate the trade to the folly of cut-throat competition in securing contracts, and we also call all friends of the Association to support our Canadian trade paper, the master plumbers by subscribing and by sending in matter for publication, and the manufacturers and supply men by advertising in the paper, as anything done to strengthen it will aid the publishers in making it a greater help to all branches of the trade."

Can it be said that the plumbing supply houses in Canada are taking a broad view of trade matters and that they are helping to educate the master plumbers to secure better prices for contract work? Are they not, on the other hand, apathetic and content merely to secure as much business as possible without looking into the future. Undoubtedly the supply men's interests are identical with those of the master plumbers as when times are good for one they are for the other and consequently the supply men should assist every intelligent effort made to raise the standards of the trade and make it possible to secure better prices for work done.

The supply house, as an assembler of goods in wholesale quantities and a storehouse from which the master plumber can draw supplies in smaller quantities, is a commercial necessity, and it is extremely doubtful that the movement to relegate the supply house to the commercial scrap-pile can succeed. But the supply men will be but aiding in their own downfall if they fail to grasp the opportunity of helping the master plumber improve his commercial position when he is endeavoring to do so.

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Plumbing Plans and Specifications

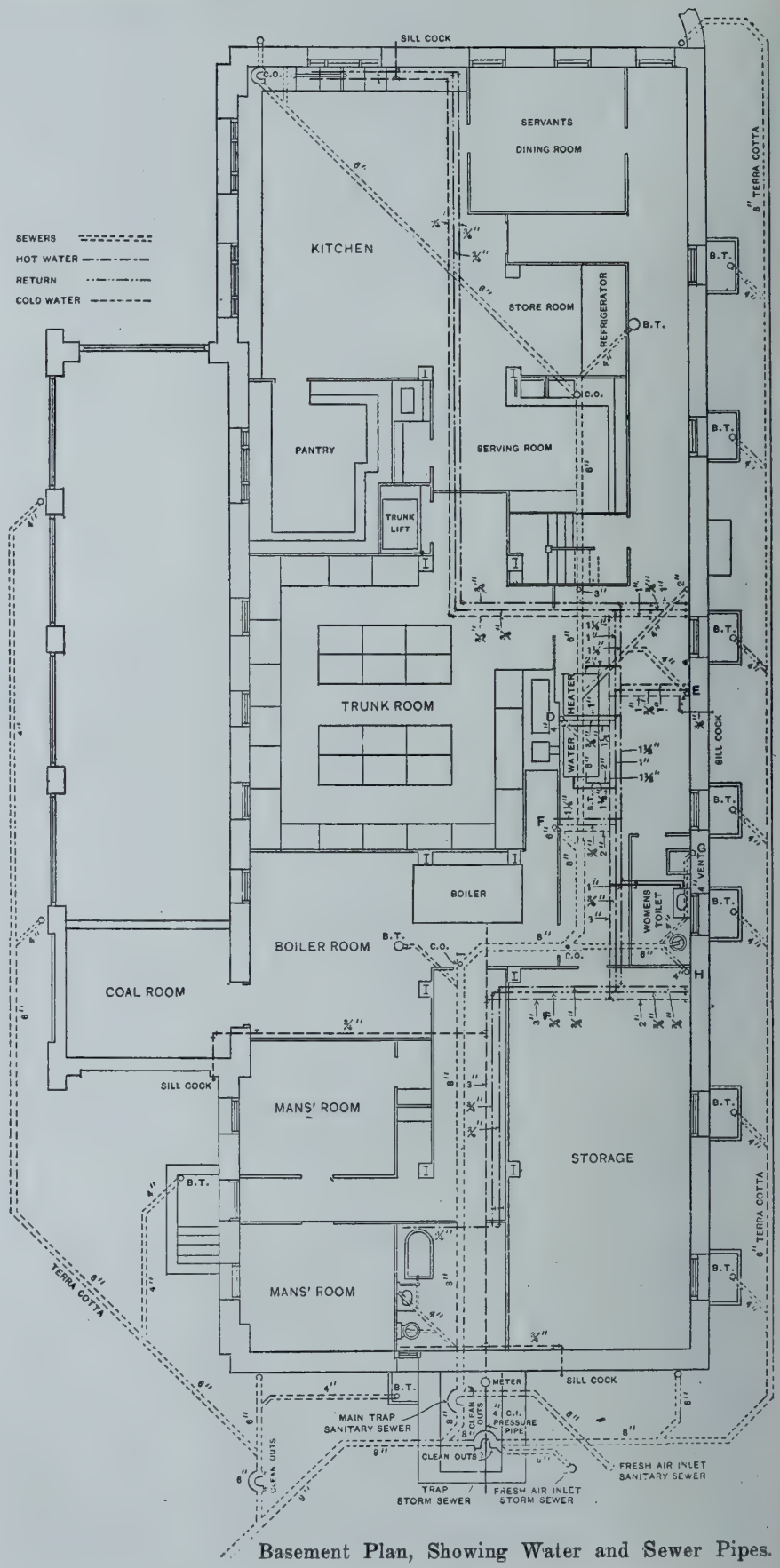
Address by O. B. Craig, Pittsburg, Pa., before the Omaha Convention of the American Society of Plumbing Inspectors and Sanitary Engineers.

There is nothing entering into the construction of the modern building which is more intimately associated with the health and comfort of its inmates than the plumbing. Under this general term is included the drainage from and water supply to the fixtures, the proper arrangement of all traps and vent lines, the heating of water and the apparatus therefor, and the proper installation of all plumbing fixtures and such mechanical appliances as house and fire pumps, sewage ejectors, fire lines, circulation pumps, suction and supply tanks, etc.

The plumbing system for a building may be very aptly compared with the circulation and intestinal systems of the human body. The water supply lines are the arteries which carry the life-giving fluid to the remotest corners of the structure. The sewers are the intestinal canal through which the waste matter is discharged, and the proper action of the one is just as important to the building and its inmates as is the function of the other to the human body.

Notwithstanding the important bearing of the plumber's work, it is as a rule given little study by some architects in the preparation of their plans and specifications. The architect will elaborate most exhaustively on his construction and materials which go to make up the superstructure, making numerous full-size detail drawings of doors, windows, interior and exterior trimmings and decorations, but when it comes to the plumbing, the most important of all from the standpoint of health and convenience, he is woefully lax in his instructions to his plumbing contractor. And it is greatly to the credit of the much-maligned plumbing trade that such good work is produced with such meagre assistance as the plumber gets from his plans and specifications.

The architect in drawing up his contracts usually stipulates that the plumbing must conform to the drawings and specifications, which clause would necessarily imply that the drawings and specifications contained all the information that might be necessary for the plumbing contractor to not only give an intelligent figure on the work required, but also to carry out his contract in a manner to insure the very best results results obtainable. But let us turn to those same drawings and specifications, and what do we find? The average building plans show us a toilet room located here, a



Basement Plan, Showing Water and Sewer Pipes.

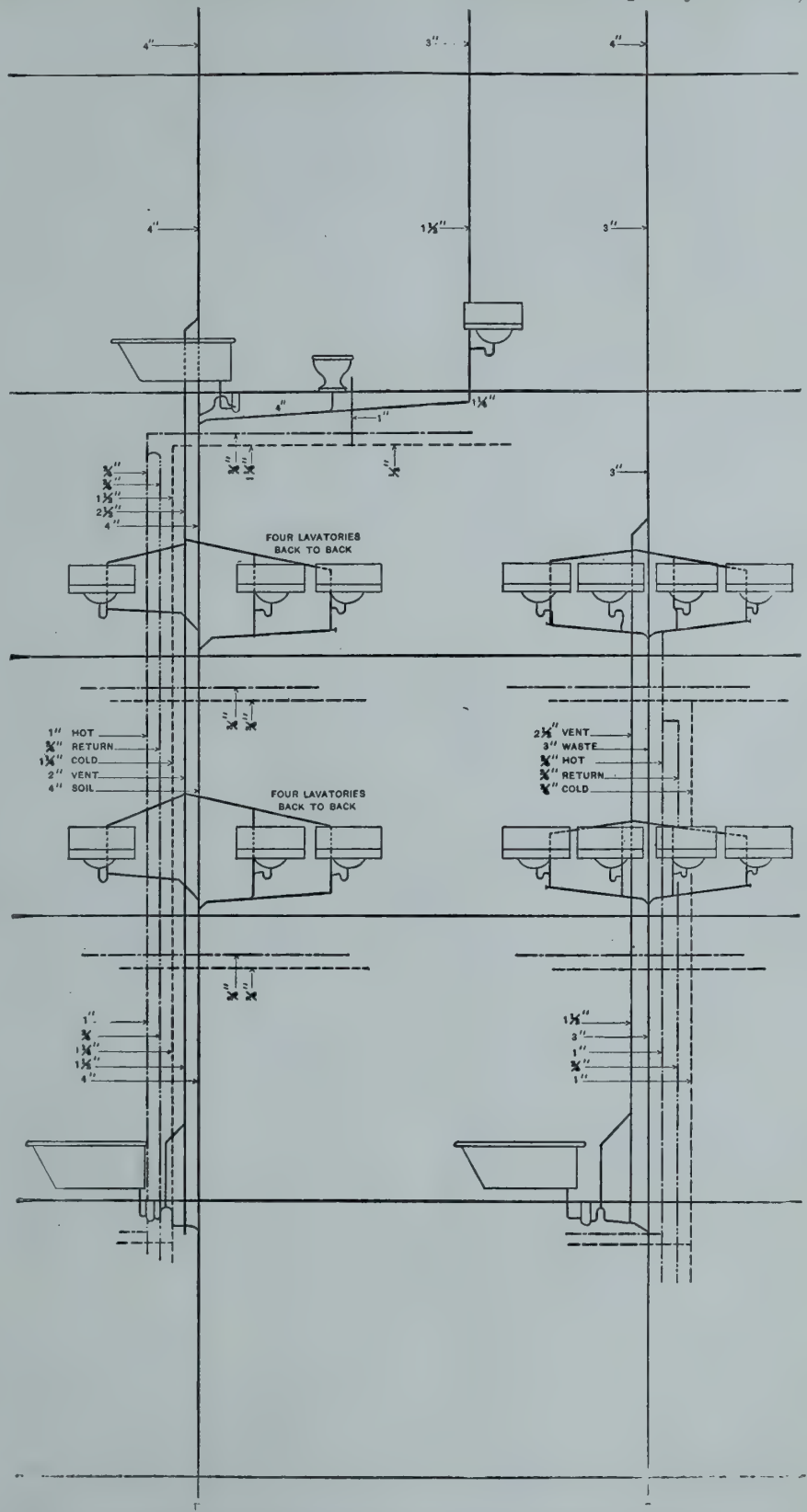
sink there, lavatories scattered promiscuously, with a few lines on the basement to indicate the general direction of the sewer, but little more. It is up to the plumber to figure, if he can, how he is to reach the various fixtures with his lines; where to locate his water heater, pumps, tanks, etc.; where to instal his risers and vent lines and how he is to keep out of the way of the steel contractor, the heating contractor, the electrician, the sheet metal contractor and, in fact, every other artisan on the job, for it seems to be the generally accepted rule that the plumber must give way to all of these more favored trades and crowd his work into impossible out-of-the-way places, working under handicaps which would hardly be tolerated in other lines of building construction.

On the drawings he finds not a line to indicate where his water pipes are to go nor the size thereof; and as for locating his basement machinery, well, let him get along with whatever space the other contractors have no use for.

The incomplete nature of the drawings is oftentimes to some extent recompensed by a carefully detailed specification, but unfortunately the specification is generally indefinite and inadequate, abounding in such terms as "pipes of ample size," "valves satisfactory to architect," "water heater of sufficient capacity," etc., etc., thereby placing upon the plumber almost the entire responsibility for the designing and proper working of the system. And woe betide him should his judgment be at fault.

A case in point came to the writer's notice not long since. A large building involving more than the usual amount of plumbing was designed, and plans were submitted to some half-dozen plumbing contractors, with request for bids on the work. Beyond showing the locations of the various toilet rooms and the fixtures therein, there was not a line in the drawings to guide the bidder, and as for specifications there were absolutely none, each bidder being requested to submit his own specification with his bid. Each of the bidders, after spending a great deal more time in figuring the job than would otherwise have been necessary, submitted his proposition, but all to no purpose, as such a wide variation of ideas was found and such a lack of uniformity in the cost of the work that the designers were compelled to readvertise for bids on a uniform and carefully drawn plumbing plan and specification.

The plumbing for a building should be so indicated in the drawings and described in the specifications as to cover everything required, and so clear and concise as to be readily understood by the average plumbing contractor. The positions of all mechanical appliances in connection with the plumbing should be clearly shown upon whatever floor plan such appliance may be located. All runs of piping through basement, together with the size of same, should be concisely indicated in the basement drawing. House traps, bell traps, area drains, sump pits, conductor lines, etc., should be located beyond dispute. Branches to risers with size plainly indicated, together with with location of such risers, should be shown, and valves and stop cocks should be plainly indicated.



Method of Drawing Connection of Fixtures and Character of Risers, the Location of Which are Shown by Letters on Basement Plan.

In addition to the plumbing lines

shown on the plans, there should be prepared a riser diagram, showing the serving of each and every fixture on each floor of the building. This riser diagram should show clearly all water lines, waste lines, soil lines, vent lines, fire lines, etc., at each and every floor throughout the building, giving the relative position and arrangement of the waste and vent lines for each fixture, with the sizes of all lines plainly designated. Pipes of the various characters can be indicated by different kinds of broken or dotted lines, with a properly arranged index on the drawing showing the kind of service each line performs.

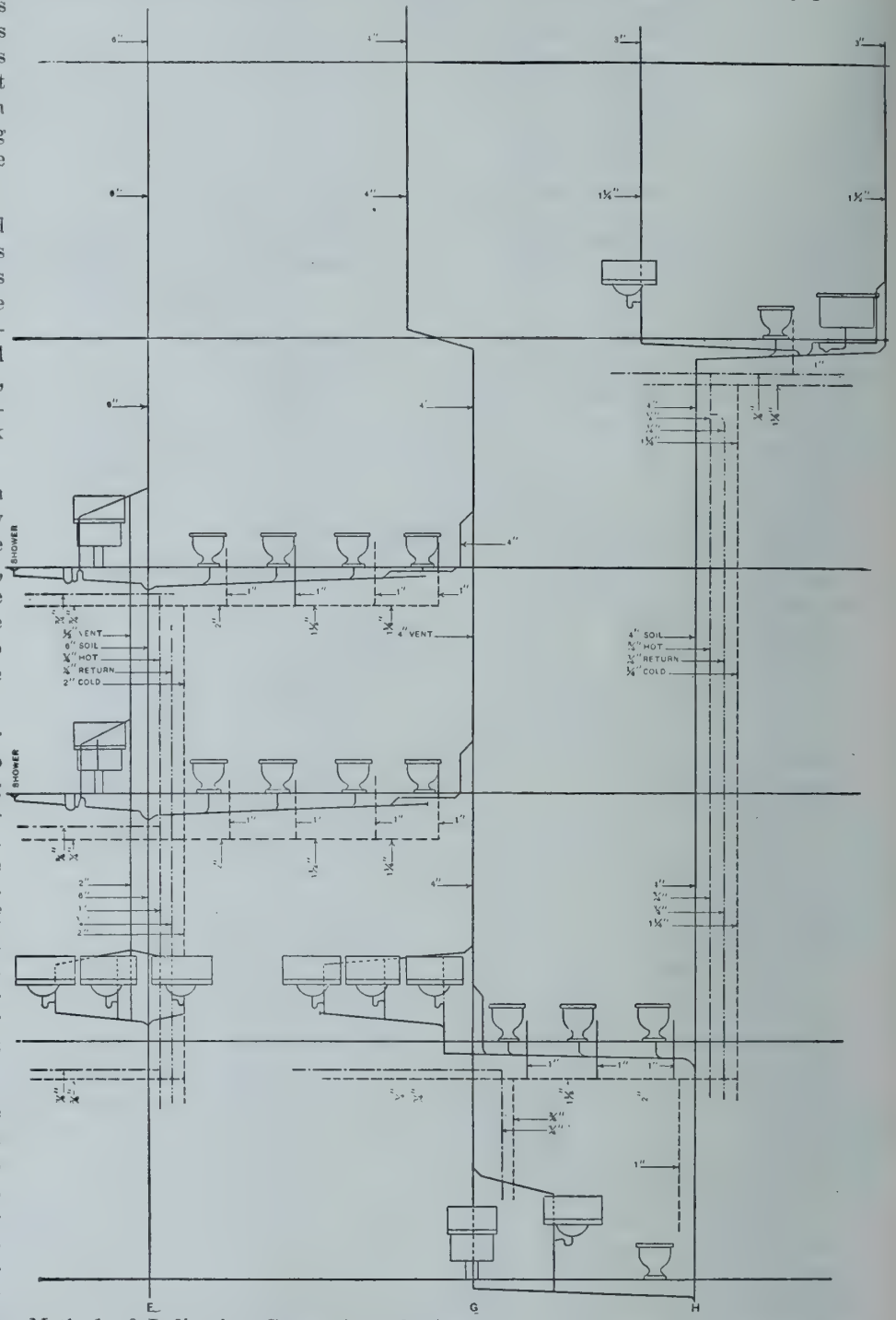
Where there are groups of fixtures, and where it is desirable to show connections to pumps, house tanks, filters, etc., it is advisable to prepare, on a larger scale than is ordinarily used, a detailed drawing showing the exact arrangement of all piping, together with all fittings, joints, valves, traps, etc., but where the plumbing is ordinary straight and simple work such detailed drawing may be omitted.

The specifications should indicate in the clearest possible manner the quality of the materials to be used and the method of installation. The location, size, depth and general direction of the street sewer, if there be any, should be clearly described, and if there be no street sewer the final disposition of the sewage should be given in detail.

The location and size of the city water main from which the water supply is to be taken should be plainly stated along with the water pressure at source of supply. This information can be obtained in any well-regulated municipality, where it is always kept on file. The specification should list accurately how many of each style of fixtures are to be located on each of the floors of the building, and should give such an accurate and detailed description of such fixtures and their trimmings as to leave no room for doubt as to what is desired.

Where catalogue plate numbers may be used to designate fixtures, care should be taken to use only such plate numbers as are well known throughout the trade, as the use of concealed or fictitious numbers is liable to excite a suspicion of collusion between the architect and the manufacturer or dealer whose fictitious plate numbers are used. It is sometimes advisable to state in the specification that fixtures or appliances other than those designated by plate numbers, but equal in every respect, will be accepted subject to the approval of the architect, though in most cases where a well-known catalogue is used such precaution is unnecessary. The similarity of designs among the various manufacturers preserves the element of competition, as where one manufacturer's design may be mentioned an almost exact duplicate can nearly always be found in some other manufacturer's line.

The preparation of a properly drawn plumbing plan and specification is something which requires considerable study and a better knowledge of the science of sanitation and plumbing practice than is possessed by the average architect, yet the manifold advantages of such a plan and specification are so obvious that the architect who has not a thorough knowledge of the subject should in all fairness to his client and to himself call in the services of a competent sanitary engineer, who, with his intimate knowledge of the work and the requirements desired, is better equipped to handle the matter. Such a plan and specification are a protection to the owner, insuring to him a practical and sanitary piece of work at the lowest possible cost. It is an advantage to the architect, whose duty to client and pride in his profession should prohibit his placing himself so much at the mercy of his plumbing contractor, who may be dishonest and unscrupulous.



Method of Indicating Connection of Fixtures and Character of Risers, the Location of Which are Shown by Letters on Basement Plan.

The possibility of disputes between the architect and contractor is almost entirely overcome when plans and specifications are properly and concisely executed. As a matter of record, a plumbing plan such as we advocate will prove of invaluable assistance should it ever be found necessary to make additions or alterations to a building, as with the existing pipe lines so plainly shown the element of guesswork which is usually so apparent in alteration jobs is largely eliminated.

With a carefully executed plumbing plan and specification, the plumbing contractor is able to estimate to an almost certainty the exact amount of labor and material required to complete the job. This means a saving to the owner, as the necessity for adding a good round sum to his estimate to protect the contractor on his "guesswork" figuring and the addition of expensive and annoying "extras" before the job is completed will be almost, if not entirely, eliminated.

And what a boon to the plumbing inspector is the well drawn plumbing diagram. Submitted to him for his approval before the bids are asked for, he can at once detect any irregularities which may not conform exactly to the plumbing code, and by a slight correction here or a suggestion there the work can be so arranged as to meet the requirements of the building and at the same time conform with the plumbing laws, preventing those distressing conflicts between the plumbing inspector and the contractor, which are so frequently in evidence throughout the country.

It is the duty of all of us who are endeavoring to advance the cause of sanitary science to urge upon the owner and upon the architect the vast importance of more careful study in the arrangement of the sanitary system in building designing and construction.

As sanitarians we have a great work to perform, and an almost unlimited field of operation, and by properly directed effort much benefit will accrue to long suffering and patient humanity.

An act recently passed by the Colorado Legislature makes it a misdemeanor for any person to tamper with electric wires or connections without the consent of the owner, or to meddle with an electric meter. A fine of from $50 to $300 and imprisonment for thirty to ninety days for failure to comply with this law, is the punishment. As it is rather difficult to fix the blame in ordinary cases, the act provides that the existence of a wire connection or any damage or alteration of a meter shall be taken as evidence of the guilt of a person in possession of the premises.

Water Supply Systems for Country Houses

"Sanitas" Describes Two Simple Power Systems in an Article in the Plumbers Trade Journal.

In plumbing systems for country houses, the question of water supply is a subject of paramount importance. In most places there is an abundance of good water available. The question we are now interested in is, to have a supply on hand, sufficient in volume, for the various purposes for which it is to be used.

This article has to do with a water supply for farm houses and other places on a farm where water is necessary. The average farmer has to depend on a pump operated by hand or on a pump driven by a windmill to supply water for his needs. Both means may be termed unsatisfactory, principally on account of the labor involved. A hand pump, such as is generally used, will only supply water enough for the actual need at the time it is being operated. With a hand pump, the storage of water for emergncy purposes is, to say the least, impracticable and almost out of the question.

The windmill-driven pump is a slight improvement over the hand-operated pump in that it eliminates the labor required and it may be used to deliver water to an open tank. This tank may have height sufficient to develop some pressure, according to the level of water in it. When the wind blows, the windmill will run the pump, but when there is no wind, the farmer may have to resort to elbow grease. The muscular exercise involved in filling a tank of large capacity may be a good thing, if viewed from a "physical culture" standpoint, but it will scarcely appeal to a man who gets sufficient exercise by a hard day's work in the fields or in the discharge of a multitude of arduous duties on a farm. So as a general proposition, the farmer has to pump water according to his needs and he rarely has an extra supply on hand.

For domestic purposes, such as cooking, washing, bathing, etc., the water has to be carried in from the pump in pails or buckets. The usual bathtub is the wash tub, the creek or the horse trough, though one may occasionally see that insanitary horror known as the portable bathtub. At certain seasons of the year, open air baths are not quite so enjoyable as a bath in a warm house, with hot and cold water.

A supply of water may be stored under vice, economical, and easy to operate, pumps, within the reach of every country residence owner of moderate means who may not care to use pumps operated by gas, gasoline, hot air, or steam. There are several makes of hot air pumping engines on the market which might be used to good advantage. There are also some makes of gasoline pumping engines on sale which are efficient in service, economival, and easy to operate. Gasoline pumping engines are practically automatic, as they only require to be started and stopped. For those who may be interested in simple forms of pumps, which will develop a good pressure, instead of more expensive power pumps, the writer will refer to two types which almost anybody can operate successfully.

The first (illustration No. 1) is known as a double-acting force pump and is operated by a lever handle. This type of force pump, if of good construction

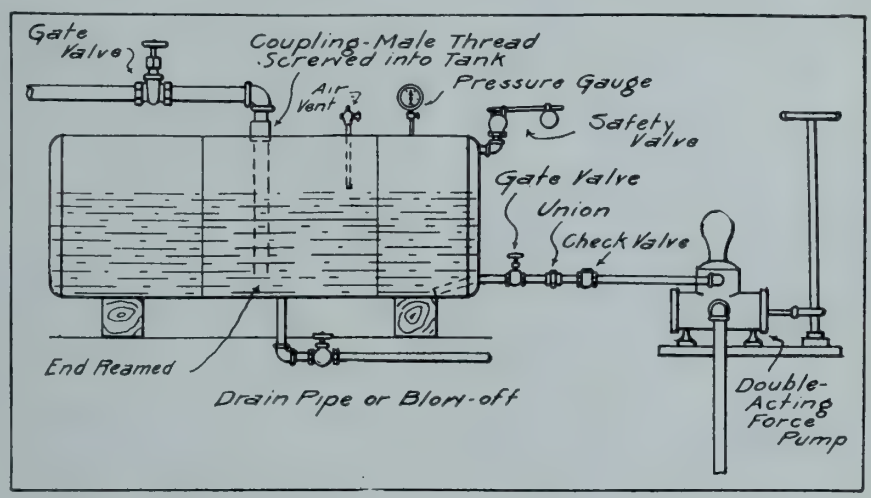


Fig. 1—Double Acting Force Pump, Operated by a Lever Handle.

and design, is capable of developing a high pressure and, when connected to a pressure tank of a good capacity, provides for a large volume of water ready for use.

The other type of pump (illustration No. 2) is operated by an ordinary work horse or a mule. Every farmer has a horse or a mule, which could be used for a short time daily, to pump sufficient water to supply all ordinary demands for a period of twenty-four hours or longer, according to the size or capacity of the storage tank. A glance at

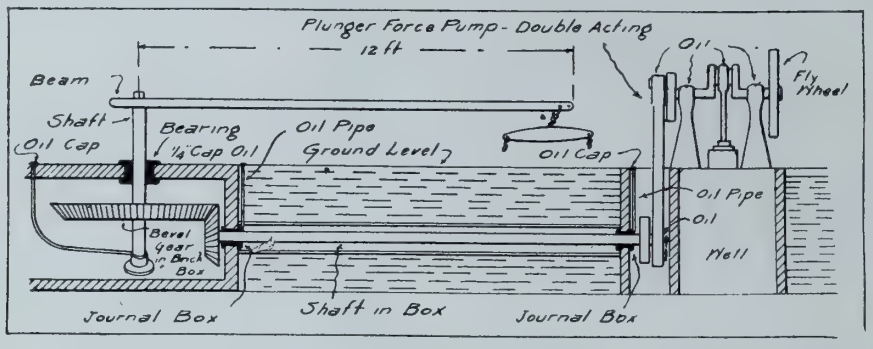


Fig. 2—Simple Type of Pump, Operat ed by a Horse or Mule for a Short Time Daily.

the illustration will show the working principle operating the pump.

A box or vault is constructed of wood or brick below the surface of the ground. The vertical shaft rests on and end bearing, at the bottom, and passes through top or cover of box, to a point about 18 inches above surface of the ground. It has a beam on the end to which a horse can be attached and also has a large wheel, or pulley, placed on it inside of the box. This pulley has mitre, or bevel, gear teeth to intersect, or mesh, with gear teeth of pulley on horizontal shaft, which is encased in a wooden box, made waterproof. The pulley, on end of horizontal shaft towards the pump, is a crank pulley with connecting rod to the crank pulley on the main, or crank shaft of the pump. Bearings or journal boxes on horizontal shaft, should be tapped at oil hole for ¼-inch pipe to be run to surface of ground, with a cap on the end which can be removed for oiling the bearing. If the shafting is correctly aligned, and properly proportioned, it will be easy to develop a high pressure in the tank by means of a plunger pump of good construction.

The tank should be of large capacity. The larger, the better, principally because of the volume of water on hand under pressure in case of fire or any other emergency requiring its use. A check valve should be used on discharge pipe from pump to tank, also a gate valve in case it ever becomes necessary to disconnect the pump for any purpose. A high-pressure gauge should be placed where person operating pump can see it, and a safety valve on tank, or pipes from tank, is an important feature that should, on no account, be overlooked or neglected. A tank 36 inches in diameter by 10 feet in length, has an approximate capacity of about 530 gallons of water.

The Heating and Ventilating of Prisons

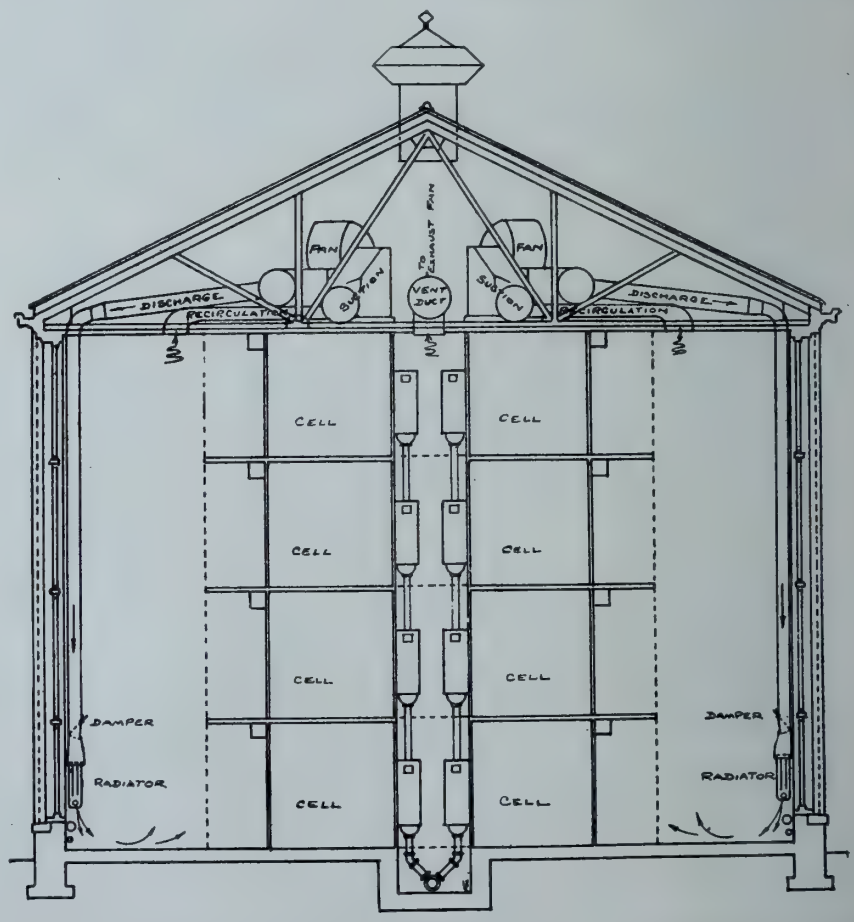
A New Method Described by John G. Eadie, M. E., in the Heating and Ventilating Magazine.

In the past few years there has been a general tendency toward improving the sanitary conditions in prisons; and one of the cardinal points considered has been that of heating and ventilating.

Modern prisons are built in the form of cell wings, often radiating from a central guardhouse. Each cell wing consists of a long building having windows on both sides, and the cell block in the middle. This cell block runs the length of the building, and consists of rows of cells placed back to back so that all will be open towards the light.

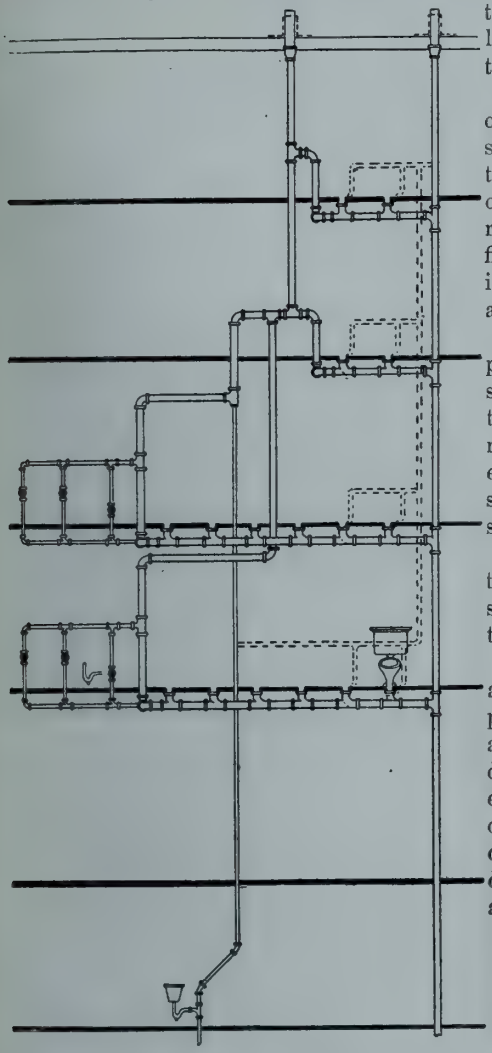
The cells are built in tiers, 2, 3 and 4, or more high. There is a wide corridor for the use of the keepers, open from floor to roof and running the length of the building on each side between outside wal's and cell block. Also there is a narrow utility corridor in the centre of the cell structure between the backs of cells, to give access to plumbing pipes, etc.

To get an adequate supply of fresh air into all parts of such a building, filled with men confined in cells hardly



Cross Section Through Cell Wing, Showing Heating and Ventilating Scheme.

large enough to stretch in, necessarily requires forced ventilation, and this is being quite generally adopted. The vitiated air is generally exhausted from the top, and in some cases in-



Remodeled Plumbing Showing Original System in Dotted Lines.

direct heat has been used, warm air being blown in along the side walls. More often direct heat alone has been used, radiators being placed under the windows.

In any case, the difficulty has been to heat the lower tier of cells while preventing the upper ones from becoming overheated. An attempt to overcome this difficulty has been made at times by dividing the keepers' corridor into two or more stories with glass floors, but this has the objection of preventing a full view of the cell structure, necessitating more keepers and interfering more or less with the light.

In planning the heating and ventilation for the new Riker's Island Penitentiary the writer, in association with Percival Robert Moses, consulting engineer, has used a method aimed to overcome this objection.

Air is exhausted from an opening in the rear of every cell and discharged out through the roof; fresh air is thus induced into the cells through the open grated doors from keepers' corridor.

The air in this large open corridor is, therefore, not subject to contamination and may safely be kept in circulation to maintain a fairly uniform temperature for all the cell levels.

To accomplish this, direct radiators of the flue type are placed along the side walls, and air is kept in circulation by fans blowing it from the top of the room down over radiators which reheat it; thence it spreads over the floor of corridor, and, in rising, part of it is drawn into the cells, all getting about the same temperature.

The method by which this is accomplished is shown in the accompanying sketch. Registers are provided at intervals in the ceiling of keepers' corridor to permit the rising, heated air to escape into ducts which lead to the suction side of fans placed in the roof space as shown.

From the fans it is blown back through other ducts leading down the side walls between windows and through the radiators as just stated.

While this process continues as long as the fans are kept in motion, only a portion of the air blown down returns again to the fan, the rest of it being drawn into the cells and out through exhaust fans. Consequently an amount of fresh air equal to that exhausted is constantly being drawn in from outdoors, tempered and mixed with the air recirculated.

In addition to the flue radiators over which the air is blown, there are other direct radiators placed between them and proportioned for heating during the day when the prisoners are in the workshop and fans need not be run. To get the full benefit of the flue radiators when used without the fans, dampers are placed in ducts just above them to deflect the heat out into the room, instead of up the flue. These dampers are operated automatically by a three-way valve placed near each fan motor, which admits compressed air to a diaphragm at each damper.

While enabling the building to be kept warm without using fans, the direct radiators have the further advantage, when used in conjunction with fans, of heating the cold air currents falling over extensive window surfaces. In this connection, the flue type of radiator, with long nipples between sections to increase air passage, makes a very effective reheater, with its attendant advantage of obviating the necessity for blowing hot air through ducts in roof space and consequent overcoming loss of heat or the use of expensive covering.

Experiments made with the type of radiator described under the above conditions have shown, as was to be expected, an efficiency much greater than when acting as direct surface. Even with the moderate air velocity of 10 ft. per second downward through radiator, the efficiency is doubed.

Plumbing in Prisons Should be Modern

Address by Harry McVea, Omaha, Neb., Before the American Society of Inspectors of Plumbing and Sanitary Engineers

The subject that has been submitted to me by your commitee deserves more atention in my estimation than any other that I can call to mind, owing to the close confinement that inmates must endure.

The air which occupants must breathe in these places should pass through the best of modern methods by which air can be purified. The writer has in mind a visit to a state penitentiary. There he had the occasion to interview an inmate who had only been confined within its walls six months as near as I could find out. This person who was thus confined for no very serious crime had failed very much in health during his confinement.

I found upon inquiry that he had not failed through worry of his present position but altogether due to close confinement. He informed me that under certain conditions of the weather the air in the cell house was very impure.

The first matter to be considered in a building of this kind surely is ventilation and the location of cells and places of confinement, so as to allow a good system to be installed in order that the greatest of care can be taken not to allow this system to interfere with the durability of the prison.

This system should not depend upon gravity alone, but should in some way be so constructed as to force circulation under all conditions of the weather. This cell house which the writer has in mind depends upon the gravity theory alone, hence my view upon forced circulation.

I do not believe that it is necessary to go into details in planning such a system as I speak about, as the building and plan of same would have a great bearing on the instaling of such a system. However, I believe that vent flues such as constructed by our National Government, with a sheet iron smokestack inside same, is an ideal job.

In the first part of this paper I have not been confined entirely or strictly to

the true meaning of this title. The very importance of good ventilation is my reason for same.

One of the principal features in relation to the plumbing of a building of this kind is the kind of fixtures to be installed. The water closets should be of a type of heavy vitrious china with an integral seat having nothing attached that a prisoner can in any way molest or destroy. The closet should also be of the hydrometer flushing valve pattern having nothing but a push button in cell room.

I had occasion to visit a city jail last fall and found closets were in a filthy condition. The general appearance of this place was very clean, in every sense of the word. This seems to show that the parties having the place in charge were under the impression that it was usual for fixtures to be in this condition, owing to the style of the fixture itself not having its walls properly flushed and not having the proper mechanism to flush it properly.

The operating appliance should never be where a prisoner could mutilate it in any way or cause breakage of same.

The lavatories should be of the same material as the closets and should have independent traps and be placed as close as possible to the fixture.

The piping relating to a job of this kind should always, if possible, be so installed so as to have access without coming in contact with prisoners. This system of piping should be constructed with all care, and construction should be of the most up-to-date methods. One thing I believe to be a very important matter in prisons is the supervision of state prisons and buidings of this style.

We are all aware that the location of these places is usually out of the control of any inspector and I know of no state which has a department which would be competent to pass on work of this description properly.

PITTSBURGERS IN TORONTO

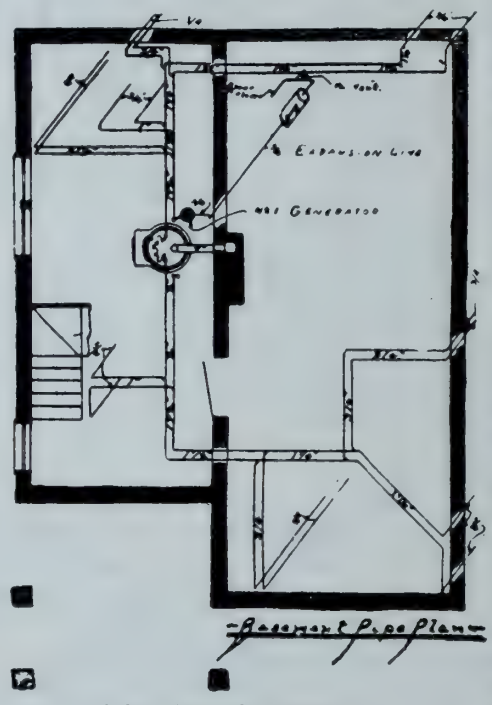
Theodore Ahrens, W. A. Myler and E. L. Dawes, of the Pittsburg offices of Standard Sanitary Manufacturing Co., and Thomas C. Collins, Montreal, Canadian representative of the company, have been in Toronto for the past week or ten days, along with W. A. Porter, manager of the Toronto branch. Several meetings have been held and available sites for a Canadian factory, including the Port Hope plant of the Standard Ideal Company, have been looked over, but at the time of writing no announcement has been made as to what policy the company will adopt regarding the manufacture of their wares in Canada. A decision is expected before the party returns home.

Heating a Modern Eight-Room Dwelling

P. W. Rathbun in the National Builder discusses the Pressure System of Hot Water, and the Economy of such an Installation.

The accompanying plans show a convenient eight-room dwelling which was recently erected at a cost of $2,000. It is of frame construction with cement block cellar walls and concrete floor in the excavated part of the basement. The price given above does not include heating or plumbing. The heating will be taken up in this article.

Hot water heating has for many years been a problem on which numerous experts have worked to bring about efficiency and the construction of a first-class apparatus at a reasonable price. A few years ago there were several pressure apparatus put on the market to revolutionize hot water heating.



Piping Plan in Basement.

Practically the entire public and prospective builders have been misled by theoretical writers, whose theories made a hot water heating system cost the party installing it a vast sum of money, more than was absolutely necessary, and which practically goes to the pipe manufacturer for large piping and to the wasting of an endless amount of physical exertion in cutting, threading and assembling same, to overcome friction. By practical experiments and experience, the writer found that with pressure heating at eleven (11) pounds applied to the water in the system, either by the use of regulating valves or mercury appliances, the pipe areas can be safely reduced 50 per cent. and the radiation 15 per cent., with tappings from 60 per cent. to 80 per cent. smaller than are used with the old open tank system. Besides this the water under this pressure can be run up as high as 240 degrees Fahr., without boiling, which gives such a system of hot water the efficiency of steam without any of the disadvantages of the latter. A pressure system as described above contains 25 to 30 per cent. less water than the ordinary hot water system. This reduction of water causes the plant to be very responsive to firing, thereby causing a quicker circulation than the old style water-logged system. The smaller quantity of water lightens the load on the boiler; the smaller piping contains less radiating surface than the large pipes of a common job, and also reduces the boiler load, which greatly increases its efficiency, and the capacity of the boiler, which remains the same as with the old system.

This quickened flow of water over the heated plates of the boiler absorbs heat more rapidly from the fire, and delivers it quickly to the radiators, and the radiators in turn, to the room; therefore, all around better results and a decided saving in fuel are are accomplished.

The accompanying plans show a pressure of hot water heating designed by the author two years ago and re-designed for his residence. The mains, branches, and tappings are according to the following schedules. This system is better adapted to the emergencies of all seasons than an open-tank system. This job has been operated during the winter months to the entire satisfaction of all concerned. There has been a practical saving in fuel with this system of from five to six tons of hard coal each winter. The economy and fuel saving is very simple, the system operating under a pressure of ten to twelve pounds, the radiation and pipe lines are reduced, the boiler remaining the same size, which causes a quicker and more rapid circulation of the water throughout the entire job. Therefore, on account of there being less water to heat, with a temperature of only 140 degrees at the boiler instead of 180 degrees with the old-style system, it required to obtain 7 degrees in all rooms, this will make a charge of fuel which should always be enough to fill the fire-pot of the boiler even with the firing door, last from three to four hours longer than with the water-logged system.

When testing this job, it was found that a temperature difference between the flow leaving the boiler and the return entering the boiler, was only 4 degrees to 8 degrees, so it is evident that the consumption of but little fuel is required to again heat this water to its former degree of temperature.

Mains and Capacities.

	Of Radiation.
1¼ inch will supply	100 to 150 sq. ft.
1½ inch will supply	150 to 200 sq. ft.
2 inch will supply	200 to 410 sq. ft.
2½ inch will supply	400 to 600 sq. ft.
3 inch will supply	600 to 1,000 sq. ft.
3½ inch will supply	1,000 to 1,400 sq. ft.
4 inch will supply	1,400 to 2,000 sq. ft.

If the length of mains are greater than 100 feet, increase them one size.

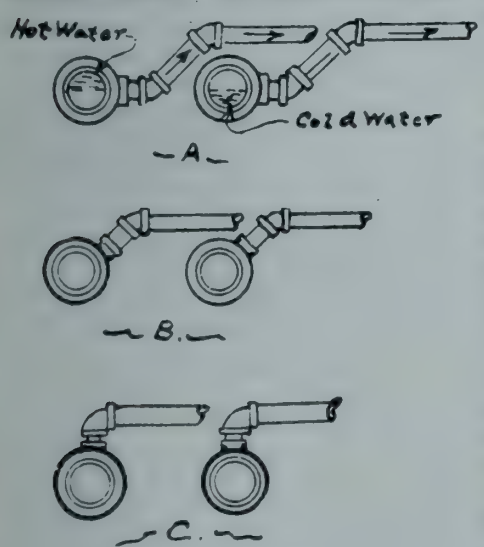
Radiator Tappings.

a. First floor, up to 25 square ft .. ½ in.
25 to 60 square feet ..... ¾ in.
b. Second floor, up to 30 square ft. ½ in.
30 to 100 square feet ..... ¾ in.
Over 100 square feet .....1 in.
c. Third floor, up to 50 square feet ½ in.
Over 60 square feet .....1 in.
50 to 125 square feet ..... ¾ in.
Over 125 square feet .....1 in.

Use one size larger tappings for radiators at the extreme end of mains.

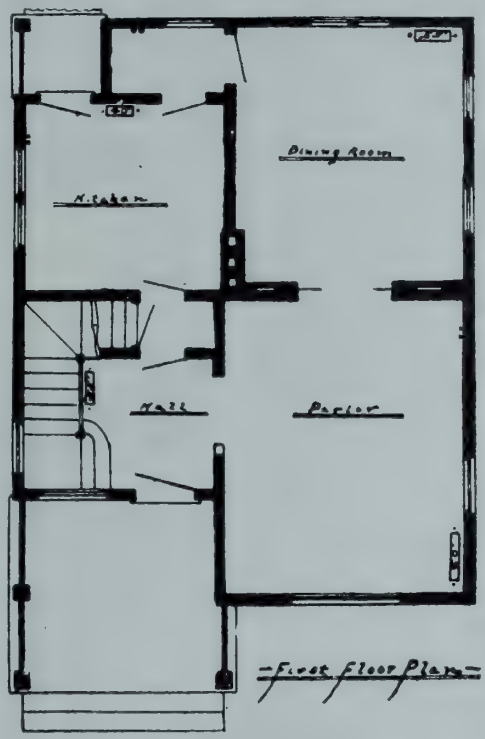
Description of Pipe Connections.

Instead of taking the branches off the mains with 45-degree ells, as is the practice with open tank systems, they are taken off in the manner shown in the hottest water which always travels at the top of the main, will enter the first radiator branch. The second, third and



Pipe Connections.

fourth radiators in turn get the next hottest water, and so on to the end of the main, leaving the last radiator to be supplied by the coolest water or rather that which has traveled on the bottom main all the way from the boiler. Where all branches are (45 e-d) taken from the top the mains must be one or two sizes larger than necessary in order to insure proper distribution of the water to



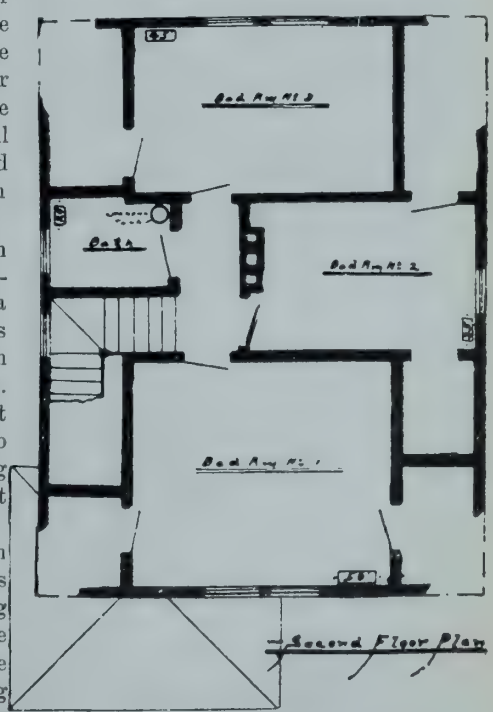
Ground Floor Plan.

all radiators and cause the last and those farthest from the boiler to receive their full share of hot water. When the branches are taken from the sides of the mains near the boiler in the manner shown in sketch "A" the result is quite different, the water in the flow main will not enter a branch until it has heated down in the main to a depth level with the top of the outlet or side of the tee.

Before the water is heated deep enough to enter the first branch of the ones nearest the boiler, it will have traveled a considerable distance up the main. As the water heats deeper, it will pass on and in turn enter the other branches. The hottest water, however, which is at the top of the main, will circulate to the last or end radiator, thus insuring good circulation in radiators farthest from the boilers.

It is evident by results produced in experience the author of this article has had in installation of pressure heating systems the past three years, that one can not put too much stress upon the fact that the old style hot water heating systems are water-logged. There being too large a quantity of water, it requires too long a time to heat and too much fuel to heat it, as well as too long a time to circulate the radiators. In the morning, nearly every one wishes warm rooms as quickly as possible. The readers of this article, who have hot water heating systems of the old style, are aware of one great difficulty which they exeperience in the way of heating the rooms in the morning. With the pressure systems and the one designed herewith in particular, an armful of shavings and a little wood has in seven minutes produced a temperature of 70 degrees in all the rooms.

We are aware that large bodies move slowly, so does the water in an old style large pipe system, and the circulation is comparatively sluggish, causing the plant to be inactive. Where pressure is produced by a regulating valve the risk run by the operator of the system is great. The writer has in mind at the present time one job which was installed by a valve, and after some months the valve stuck, and, upon the water rising to a boiling point, the valve refused to operate. The result was an explosion, which blew out the entire side of the room, and carried the expansion tank some distance. With a mercury regulator, of which there are several patents on the market, there is practically no danger when creating a pressure upon the system, as these regulators are constructed with a standpipe extending from a bulb-shaped casting on the bottom to a similar-shaped casting on the top, and is constructed with brass tubes in this standpipe, so that the expansion of water from the system will cause a column of mercury to rise in the standpipe of the



Plan of Upstairs.

device to 21 inches, which automatically and positively seals the system from the atmosphere, as there are 5½ pounds of mercury in this regulator, and mercury being twice as heavy as water, there is a

pressure of eleven pounds generated in an absolutely safe manner. As the water upon expanding rises, the mercury against a bottle plate in the top casting when an excessive pressure is created, the boiling water then passes around this plate and expands through the expansive line taken from the top of the same to the expansion tank which is open to the atmosphere the same as the open tank system. This regulator has the ability to quickly and safely send the water temperature up to 240 degrees without boiling, which means all the difference between suffering and comfort one cold day.

Letters from Correspondents on Trade Problems

The Editor Invites Short Letters and Sketches Describing Problems Met With or Original Methods of Doing Plumbing or Heating Work—Name of Writer Required, Though Not Necessarily for Publication.

THREE-INCH SOIL PIPE.

Editor Plumber and Steamfitter of Canada,—I notice the article in your issue of June 15 on "Three inch soil pipe in dwelling houses," by Charles M. McHugh, relative to the proper size for soil pipe for an ordinary dwelling, and fully concur in his statement to the effect that were all men of the same mind the plumbing trade would indeed be slow in advancement and discarding the questionable in plumbing practice. Mr. McHugh's article is valuable to the many who are attempting to free the general and common practices in plumbing design of all that is superfluous, in that his statements are conscientious, and a man of his standing and evident ability should be in position to obtain data which would go far toward deciding questions such as the proper size for soil pipe once for all. Such decisions, of course, must be free from personal or prejudicial bias to be of value.

Trade Press Helps Plumbers.

Perhaps it is due to the ease with which technical knowledge may be acquired that decisions regarding changes, at times radical, in plumbing practice, and along other lines, when once suggested, if based upon merit and sound reason, soon find an extending circle of champions whose broadening field of influence brings about the general adoption of the latest and best in plumbing design as in other fields. The trade press, in addition to giving men of the ability and training necessary to the broad and logically correct consideration of technical and other questions concerning the trade an opportunity of exchanging ideas and conferring with men of like ability, gives the average man the opportunity of benefiting by the thoughts and labors of men in better position to obtain exact knowledge. This is only one way of many in which the journal is the great factor in the constant advance being made toward the goal of plumbing craft—a system of plumbing perfect in design and installation.

The four-inch soil pipe, in so far as I have been able to obtain information concerning plumbing as done by the ancients, has been standard since there was a sufficient need for soil stacks to make a standard necessary. Certainly there has been no reduction to four-inch in recent years. Martin J. Ward, with whom we have the pleasure of being associated with at the St. Louis Trades School, an active and energetic enthusiast after better plumbing, of thirty-five years' experience at the trade, informs me that four-inch soil pipe was used altogether when he entered the trade (in those days hand made and of lead) for stacks on small installations, and if there was a general change in standards to the four-inch for this type of installation it antedates Mr. Ward's connection with or knowledge of the trade.

Inspectors Must be Progressive.

A man of the ability, training and technical knowledge necessary to the satisfactory and conscientious performance of the duties attendant to a position carrying the arbitrary power of an inspectorship should be the first to grasp the importance of advances made from time to time in plumbing, and it goes without saying that he should at all times be amenable to reason.

While the conclusions drawn are all to the evident satisfaction of Mr. McHugh, still the careful investigator will not be satisfied with generalities, but must have specific knowledge in order to arrive at indisputable conclusions and we would inquire further into detail concerning instances which Mr. McHugh was kind enough to cite in his article.

Why is it necessary to use the largest cross section of the water closet waste instead of the smallest in determining the proper size for soil pipe? Of course, a factor of safety is advisable and the relating action of the waste outlet might possibly allow a flush to leave the fixture in a peculiar manner, yet it is not the first of the flush which causes the loss of seal in traps at a lower level through the formation of a partial vacuum, but the last, and the latter part of the flush is usually slight, due to the cessation of syphonic action.

Reversing Air in Soil Pipe.

Is it reasonable to suppose that the meaning of the term "air in the soil pipe being reversed" contemplates the formation of a partial vacuum or is back pressure meant? If the first, we would call attention to the fact that the tendency of water falling through a vertical pipe is to take a rotary direction (an ordinary lavatory waste may be used to illustrate this point) with a hollow cone-shaped space extending downward from the top. In a four-inch stack the greater part of the discharge from a water closet on a higher floor is broken into spray upon entering the stack, the amount of discharge being insufficient to take the course above referred to. This spray, together with the amount of water tending to fall in a mass, may as effectively fill the bore of the four-inch stack and no harm would result if the bore of the stack were not filled, as the more solid flow would fill the three-inch. "The strong current of air" or partial vacuum is simply a lack of full atmospheric pressure at this point due to the frictional resistance offered by the inside of the stack to the passage of air and the inertia of the air, both of which are slight. The suction or partial vacuum formed at a given point after the body of the flush has passed the point is relieved as soon as an atmospheric equilibrium obtains. The velocity of flow of a discharge down a stack is the velocity of a falling body through a like distance, less the inertia offered by frictional and air resistance to flow. Careful experimenters have determined that under the same pressure air will flow through the pipe at four times the velocity water will and with these simple elements of natural science at hand it is theoretically possible to determine the infinitesimal period of time required for sufficient volume of air to affect a total release to reach the point of rarefaction, and if our conclusions are correct the time would perhaps be the same for either three or four-inch.

Efficiency in Crown Vent.

In suggesting that the waste and vents cannot be made too large, Mr. McHugh loses sight of the fact that if the wastes of our drainage systems are properly flushed the question of vent efficiency (and the crown vent to an S trap is directly referred to) will be of less importance and the maximum size waste that it seems should be used is one which the waste from the fixture will fill when discharged into it.

The bending out of a three-inch lead bend to four inches in order to make it large enough to go over a closet spud

suggests the putty joint and its attendant shortcomings. Would it not be entirely practicable to increase the inlet of the lead bend to four inches in diameter (by connecting a piece of four-inch lead pipe beaten in at one end and the three-inch bend beaten out just enough to receive it without decreasing the internal diameter of the bend at any point) before putting in place ?

Position of Inspector Important.

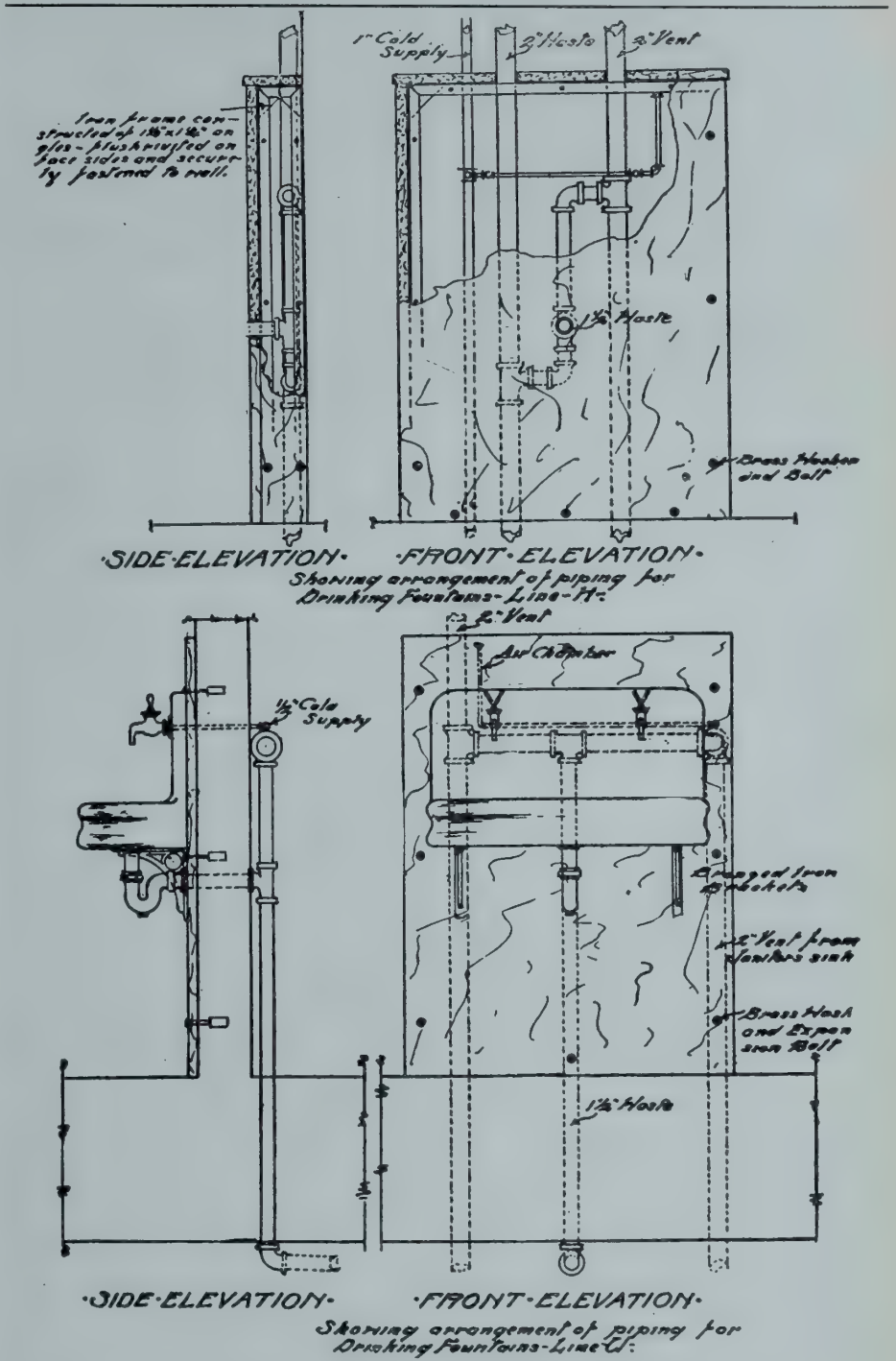
The plumbing inspector who is capable and conscientiously fulfills the duties of his office is deserving of a place of no mean importance in the affairs of men. The inspection system is an outgrowth of conditions brought about by unscrupulous and inefficient men plying a vocation closely allied to that of the family physician. As yet the system is in its infancy, and evils exist which must be blotted out. The paternalistic attitude of a city or State in making laws governing plumbing installation and inspection gives the builder confidence which is in instances unwarranted, for the man of unquestioned ability and responsibility is in a way put on a level with the "wheelbarrow" man, and the confidential assertion that "Oh, yes, the plumbing is all right—the inspector passed it" is not always borne out in actual service. Then, too, all plumbers are not rascals, nor are all rascals plumbers—inspectorships become political perquisites and offices which should go only to men of integrity and possessed of proper technical knowledge and training become the property of incompetent politicians, who further their personal and political aims through prostitution in an office upon the integrity of which so much depends.

It is, indeed, unfortunate that even some of our inspectors take the stand that any changes from the ordinary or routine installation will not be sanctioned before they are fully tried out under all possible, and a great many impracticable conditions, in a way blocking the way against his future conviction, for without trying out the suggested changes and experiments himself, what would be a practicable way of convincing him of the propriety of even a simple change ?

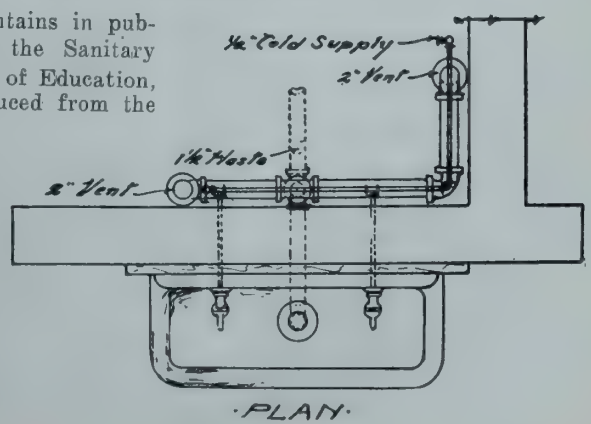
Advantage of Three-inch Stack.

The difference in cost between the systems would extend to the saving in labor consequent to the lighter installation. A feature which readily recommends the three-inch stack is that it may be run in an ordinary five-inch partition without furring or having the hubs project through the plaster.

Such considerations as convenience, adaptability and cost are secondary to that of efficiency, and when men of the unquestioned ability of Messrs. C. B. Ball, J. J. Cosgrove and others, who are recognized authorities upon such subjects, openly favor and endorse the change from four to three-inch soil pipe



Detail of drinking fountains in public schools, designed by the Sanitary Department of the Baard of Education, New York City. Reproduced from the Engineering Review.



for a great many installations, pointing to the fact that the four-inch stack is a relic of the days when the flush from the water closet was really a four-inch stream (in the plunger and pan closet period), and that the more nearly full a pipe flows the better scouring action may be expected, is it not time that we who are inclined to differ with these well-informed gentlemen obtain some specific information from which to work and not depend upon a mass of conditional generalities for support of our theories?

KING T. COFFEY,
Superintendent of Drafting, St. Louis Trade School.
St. Louis, June 23, 1909.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Louis Blouin, plumber and tinsmith, Quebec, has assigned.

Frank Goodwin, tinsmith and plumber, Sarnia, has assigned.

Raoul R. Leboeuf, plumber, Montreal, has filed a consent of assignment.

Montreal city council purposes buying out the Montreal Water & Power Co.

Kent & Parr, electrical supply men, Strathcona, Alta, have dissolved partnership.

Ingram & Davey secured the contract for steel for the septic tanks at St. Thomas.

A curator has been appointed for the plumbing business of R. R. Leboeuf, of Montreal.

The Standard Sanitary Mfg. Co., of Pittsburg, has been granted a license to do business in Ontario.

Electricians in future will have to pass an examination before being granted a license allowing them to work in Winnipeg.

J. A. Gordon, of Montreal, President of the National Master Plumbers Association, is away on a trip to the Old Country.

The plumbing, heating, ventilating and galvanizing work on the high school at Medicine Hat has been awarded to James Rae at $9,200.

The South Ward school, Orillia, will be heated by the Pease Co., Toronto, the work being done by Phillips & Co. The contract amounts to $1,292.

S. R. Howard, formerly secretary of the King Radiator Company, Toronto, is now covering Ohio and Indiana for the U.S. Heater Company, Detroit.

Jesse Anderson, Barr & Anderson, Vancouver, is making a holiday trip to Boston, Mass., with his wife, whom he married at Boston about three years ago.

E. Holt Gurney, sales manager of the Gurney Foundry Company, Toronto, has been receiving congratulations on the arrival of a lively daughter in his household.

The town of Kenora has asked the Plumber and Steamfitter for a copy of the Toronto plumbing by-law. A new set of by-laws is to be adopted by that place.

A party of Toronto master plumbers including Messrs. Hogarth, Clapperton, Purdy and Armstrong, are going trout fishing north of Port Hope during the next fortnight.

The Montreal water committee have awarded the following contracts for waterworks supply: Cast iron pipes, Canada Iron Co.; special castings, P. Amesse & Co.

Hutchison, Wood & Miller, Montreal, have awarded the contract for plumbing and heating in the Norman White residence, at Westmount, (Montreal) to John A. Gordon.

Edmonton union plumbers went on strike ten days ago. This is looked upon as a forerunner of a general strike of all building trades in sympathy with the striking carpenters.

Steven B. McManamin, of Fredericton, has severed his connection with the Monitor Acetylene Mfg. Co., and will establish a plumbing and steamfitting business at Bridgetown, N.S.

E. B. Dixon, St. Thomas, will instal the plumbing, heating and gas piping in the new Bell Telephone Co.'s building at that place. The electric wiring will be done by Hamilton & Stott.

The steamer Morien brought 520 tons of cast iron pipe for the City of Halifax. The pipe is part of a purchase of $18,000 made in Scotland, and will be used for the extension of the water service.

The new organization of Toronto steamfitters will not be received into affiliation with the District Trades and Labor Council. This was the decision arrived at at a recent meeting of the council.

Paul A. Smith, formerly with Cluff Brothers, Toronto, and more recently Ontario salesman for the Ideal Manufacturing Company, Detroit and Windsor, is now Detroit city salesman for the Ideal Company.

Harry Agnew, of the Crane & Ordway Co., Winnipeg, spent a few days in Toronto about the middle of June. It is understood that Mr. Agnew's trip was preparatory to the location of a supply house by the Crane Company, Chicago, at an early date.

The Orillia Hardware Co., at $2,303, will instal the heating in the West Ward school there; also at $1,248, will instal the heating system in the Central school there. As well as this, the same company will do the plumbing work in the Central and South Ward schools.

N. Cronkhite, formerly of the Port Arthur News staff, has resigned his position to take the place of manager with the Plumbing & Engineering Supply Co., of Fort William. Mr. Cronkhite has had extended experience in the plumbing and engineering business.

W. Large and F. Bailey, plumbers, of Brampton, were driving to Huttonville the other day, when their horse ran away, upsetting the rig and severely injuring both men. Large had a leg broken and was badly bruised, while Bailey sustained a broken arm and other injuries.

The Kerr Engine Company, Walkerville, have the order for the iron body gate valves for the Cobalt Hydraulic Power Co., Cobalt. The Kerr Company are universally busy on valve and hydrant contracts, and on radiator and gate valve work and are running at full capacity.

The Cameron Septic Tank Company, Chicago, have notified several Canadian municipalities that they intend taking action for infringing on their company's patent. A meeting of representatives of some of the municipalities concerned was called to meet at Berlin on June 29. Ald. Harry Mahoney, Guelph, represented that city.

A fire which started in M. M. O'Connell's plumbing shop at Ottawa some days ago resulted in a property damage of $20,000. The blaze started in a pile of oakum in the store house, and spread so rapidly that in a few minutes the building, which was a frame one, was a mass of flames. The loss was fairly well covered by insurance.

Contracts for the supply of English cast iron pipe to the municipality of Oak Bay, B.C., have been let, R. Angus being the successful tenderer. The amount involved is $15,952.30, that being the lowest tender. The B. C. Foundry and Engine Works will supply the special castings. The contract for valves and meters will be awarded later.

Nearly a year ago the town of Forest, Ont., entered into an agreement with J. M. Percy, J. McPherson and J. Ramsay, whereby they were given posses-

sion of the carpet factory property under certain conditions. They opened a brass foundry in August last, manufacturing safety gas fixtures, but the venture was not a success, the result being that the machinery is being taken out, and the property again returns to the town.

David Yuile, one of Montreal's prominent business men, died in Baltimore last week, where he had gone to undergo an operation at the Johns Hopkins hospital. Mr. Yuile was born upwards of 60 years ago in Glasgow, Scotland, and it was in that city he received his early education, coming to Canada when a young man. Mr. Yuile was largely interested in Warden King & Co. His wife was a daughter of the late Warden King.

Alexander Wilson, senior partner of the hardware and plumbing business of A. & W. Wilson, will celebrate the fiftieth anniversary of his arrival in Victoria, of which place he has been a resident ever since. Mr. Wilson has always taken an active part in public affairs, having been alderman for several years. He has seen Victoria grow from its infancy and has always been a firm believer in the future of the city. Congratulations are being extended to Mr. Wilson by his many friends.

The premises of the Eureka Gas & Electrical Co., Winnipeg, were damaged by fire recently. The building contained gas stoves and gas and electrical fittings to the value of about $2,500, but the fire was confined almost entirely to the back premises, where there was not much of value. The loss will be about $500, and there is $1,600 insuarnce on building and contents. There was no one in the building when the fire broke out, and the manager, Abraham L. Wilkie, is unable to account for it.

Thomson & Homer, sanitary heating and ventilating engineers, Winnipeg, have opened a branch in Saskatoon. J. E. L. Homer is in charge. Premises have been secured on 21st Street. A show room will be fitted up with plumbing fixtures and other goods handled by the company. Mr. Homer sees a good opening and is confident that the city has a prosperous year before it. A good trade is anticipated right from the start, as the building programme this year is a big one and includes many large contracts.

Work is now well in hand on the new structure being erected by Watson & McGregor, at Victoria. The building will cost $8,000, and will be completely occupied by the firm. The ground floor of the structure will be utilized as a store, while the sheet metal works will be housed in the top floor. A plumber's shop will be located in the rear.

O. J. Deegan, plumber, Port Arthur, will erect a solid brick building for his business, which has outgrown his present quarters, Mr. Deegan expects to let the contract for the building at an early date.

Mayor Westman, of Chatham, has reached a practical solution of the meter difficulty, which has engrossed his attention since becoming chairman of the water commissioners. Manufacturers are given a 6 cent rate. It is understood this settles the difficulty except for one concern, which secured an injunction to prevent the shutting off of the water, and which is believed to be irreconcilable. The injunction writ alleges that Mayor Westman's firm being holders of a plumbers' license issued by the water commission and also profitting by work which the meter by-law renders necessary, Mr. Westman is disqualified as a member of the commission. The contention is a peculiar one, and, if carried out to its logical conclusion, would practically disqualify any plumber from holding the offices of mayor or water commissioner.

NOVEL LETTER HEAD.

The London Well Drilling and Supply Co., have established themselves as plumbers and steamfitters at King and Talbot Streets, London. A panel down the side of their letter head contains the following :

Plumbing, Steam Fitting, Brass Goods, Gas Fixtures, Steel Tanks, Wood Tanks, Gasoline Engines, Gasoline Steel Towers, Derricks and Flag Poles, Steam and Power Pumps, Electric and Air Pumps, Pipe Fitters' and Machinists' Tools.

Air Pressure and Pneumatic Tanks, for Water Systems for Hotels, Hospitals and Country Residences.

Wells Drilled for Farms, Towns and Cities, Water Guaranteed.

We Supply Pumping Machinery, Hydrants and Stable Fittings.

The Celebrated Kewanee Waterworks System for Towns and Villages.

RADIATOR PLANT AT PORT ARTHUR.

The negotiations now going on between Port Arthur city council and Mr. Holland, of Syracuse, N.Y., are entirely independent of the Holland Radiator Co. Mr. Holland holds certain patents and these he offers to turn in to a locally organized company, with a capitalization of $40,000, receiving therefor a certain proportion of the stock of the company. The patents cover certain improvements in radiators, boilers for heating purposes and stoves, and are said to be the same as those under which the Holland Radiator Co. works.

Mr. Holland himself has been in Port Arthur for some time, and the city council has despatched Mr. Wiley, of Port Arthur, to Syracuse, Chicago and New York, to investigate the bona fides of the proposition. On his report being made the local company will be organized and the establishment of an independent radiator company in Port Arthur will be proceeded with.

NOTHING UNEXPECTED.

Jack Birchard, who is known throughout Western and Northern Ontario as traveling salesman for the King Radiator Company, Toronto, spent last week in Detroit attending the National Master Plumbers' Association convention and while there he fell in with an old school friend who is in the plumbing business.

"Whenever you're in town come up and bunk with me," his friend urged as they separated. "No matter what old time it is. If I'm not there just go ahead and make yourself at home. I'll be sure to turn up before daybreak."

That night Jack found the hotels pretty crowded and, remembering his friend's invitation, sought out his boarding house. There was only a dim light flickering in the hall, but he gave the bell a manful pull. Presently he found himself face to face with a landlady of grim and terrible aspect.

"Does Mr. Smith live here ?" Jack asked.

"He does," snapped the landlady. "You can bring him right in !"

PLUMBING IN HIS OWN HOUSE.

A Springfield, Missouri, man, who appealed to the criminal court from the police court, where he was fined for violating a city ordinance by roughing-in a job of plumbing in his home, without first having secured a permit, was discharged by Judge Page. Although the court held the city ordinance affecting the licenses to be secured by plumbers is valid, he also held that any one has a constitutional right to instal or perform any work in his own home. Judge Page said that many who are not physicians practise medicine in their homes, and do not violate the prescribed regulations. The decision is expected to have a far-reaching effect, as numerous charges have been registered in the police court against Springfield citizens who have improved their property in various ways, and who have been alleged to have violated the city ordinance without securing a permit.

Wolverine Brass Mfg. Co.'s Display at the Master Plumbers' Convention at Detroit.

WOLVERINE CO.'S FINE EXHIBIT.

The Wolverine Brass Mfg. Co., Grand Rapids, Mich., and Chatham, Ont., had the most attractive exhibit at the recent Master Plumbers' Convention at Detroit, the accompanying illustration giving a fair idea of its arrangement. A special feature was the Wolverine Nickel Chair, shown on the right of the display. It was given to the person who made the closest guess of the number of articles in the entire exhibit, the winner being a Chicago man.

L. A. Corneilus, president of the company, was in personal charge of the exhibit.

TOILET CONVENIENCE IN SHOPS.

The comfort of the employees is a thing of very great importance to successful manufacturing, though this is not realized nearly as widely as should be the case. What man taking a horse out on a track to make a speed record would put upon him a heavy, ill-fitting harness, hitch him to a dump cart and pile brush and stones on the track? Surrounding the employees with uncomfortable, ill-adapted conditions, physical, mental and moral, is not one bit more idiotic or short-sighted, but it is far too commonly the fact. These and the following observations were made recently in a lecture on the design and construction of industrial buildings delivered before the College of Mechanical Engineering of Columbia University by Herbert F. Stimpson, industrial engineer, New York City.

Much is said about the time wasted by employees in toilet rooms, in unnecessary conversation and in similar ways, and all sorts of coercive methods are used to overcome this. A far better cure for all such soldiering is a good bonus system, because it makes it directly to the interest of the employees not to waste their time. Toilet rooms should be designed to provide for the maximum demand which will occur at certain times of the day rather than be so limited as to inevitably cause crowding, and therefore offer temptation to linger and talk. They should be located in a corner of the structure if possible so as to get cross drafts, and the ventilation should be carefully looked after. They should not communicate directly with the workroom, but be entered through the wash and locker room. Care should be taken to arrange all fixtures so that the aisles will have no dead ends and that the movements of the employees through the rooms will be facilitated. All such rooms should be so located as to reduce the maximum travel as much as possible. It is better to have two men travel 50 ft. each than to have one travel 1 ft. and one 99 ft.

A WINDOW DISPLAY IN A PLUMBING SHOP.

The Plumbers Trade Journal, in Four Pictorial Chapters, tells the Taile of a Lady Clerk in a Plumbing Shop. Fig. 4 Shows how the Display Appeared From the Street.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

A waterworks system is proposed for Oxbow, Sask.

Work has been commenced on Clareholm's (Alta.) waterworks system.

Wingham's proposed waterworks system is estimated to cost $5,865.

Additional sewers and flush tanks will be installed at St. Catharines shortly.

Tenders will be received for sections of Chapleau's proposed water works system.

The Belleville Board of Works is considering the construction of a number of sewers.

The instalation of the waterworks and sewerage systems at Wetaskiwin, Sask., has begun.

John Wagner, Cleveland, has the contract for sections 4 and 5 of Toronto's trunk sewer.

It is proposed to raise $20,000 additional for waterworks extension at Kamloops, B.C.

The Toronto City Engineer will shortly call for tenders for eight miles of water mains.

Orillia ratepayers have approved of a by-law to spend $55,000 for sewerage disposal works.

A by-law for new sewers and sidewalks was passed recently by the town of St. Paul, Que.

Claresholm, Alta., ratepayers have carried a by-law to issue debentures for $56,00 for a water system.

Rosthern, Sask., ratepayers will on July 5 vote on a by-law to spend $6,000 on a fire protection system.

Tenders are invited by the Peterboro Water Commissioners for extensive work in connection with the waterworks.

The Vancouver Board of Works have adopted the scheme for the Mount Pleasant sewerage system. Estimated cost, $133,000.

By-laws amounting to $313,600 in all have been carried by Regina ratepayers, of which $148,000 is for waterworks, and $9,000 for sewerage.

The Toronto City Engineer has recommended the construction of sewers in the recently annexed district of Braeondale, at an approximate cost of $102,590.

The plans submitted for a waterworks system at Markdale will be passed by the Provincial Board of Health after a few amendments have been made.

The report and plans prepared by T. Aird Murray, C.E., Toronto, for a sewerage disposal system for North Toronto, were recently accepted by the Provincial Board of Health.

The work on the temporary pumping plant to be erected at Thames and Horton Streets, London, to pump the water from the artesian wells into the mains, is going ahead rapidly, and it is expected that it will be in proper running order by July 1.

The contract for the instalation of the Yorkton, Man., waterworks system has been awarded to the Municipal Construction Co., of Regina. The Municipal Construction Co. has also been awarded the contract for the Estevan waterworks, amounting to $11,455.

By July next year, the Esquimalt Waterworks Co. expect to be in a position to deliver 15,000,000 gallons of water at Esquimalt from Goldstream. Already preliminary preparations have commenced on the work and within a short time active operations will commence.

Preparations are being made by the Esquimalt Waterworks Co. to lay a large pipe from Goldstream to Esquimalt. The capacity of the new pipe line is a very large one—15,000,000 gallons per day. Victoria's present supply is only 3,000,000 gallons. T. Lubble, manager of the company, says his corporation have in view the object of supplying water for industrial concerns, which, it is felt, will be located on the harbor, which is one of the finest in the world. This large capacity will afford an opportunity for Victoria to get a supply in case of necessity.

General Building Notes.

A. Ruzzuto, Fernie, B.C., will erect a new hotel there.

C. J. McMurray will build a $5,500 house at Winnipeg.

G. Ritchie, Hamilton, Ont., will build a $2,500 brick house.

A $10,000 dwelling will be built at Toronto by E. Davies.

D. J. Ross, Winnipeg, will build five houses to cost $17,000.

E. F. Hutchings will build at Winnipeg a $22,000 warehouse.

D. Abramovitch, architect, Winnipeg is erecting seventeen houses.

Plans have been prepared to erect an apartment block at Winnipeg.

W. H. Gardner will erect a store and office building to cost $45,000.

Campbell & Lucas, Melville, Sask., will have a business block erected.

A $28,000 addition will be made to St. Joseph's orphanage, Winnipeg.

W. W. LaChance is preparing plans for a $45,000 school at Saskatoon.

G. E. Hutchinson, of Regina, is preparing plans for the Lumsden hotel.

The Canada Weekly Printing Co. will build a $7,150 structure at Winnipeg.

Thirty-seven permits totalling $151,620 were issued last week in Vancouver.

The Bank of Montreal have plans ready for a $250,000 hotel at Port Arthur.

The Kinmore Apartment Co. will erect a $200,000 apartment building at Winnipeg.

The Union Bank are getting plans ready for a new bank building at Wilkie, Sask.

T. R. Fenton has plans for the new Imperial Bank building at Prince Albert.

Architect J. E. Wize, Edmonton, has plans for a three storey store and office block.

W. Hargraves, jr., and R. H. Corbett will erect residences this season at Kamloops.

A couple of Morden, Man., citizens will build a $30,000 business block at Prince Albert.

Morris Reid, Toronto, will build two pairs of semi-detached houses to cost $10,000.

Chas. Hall, Brandon, has the contract for a new block. Estimated cost $12,000.

Wm. Ferguson, Brandon, will have a brick block put up at once. Cost over $10,000.

M. J. Morris, Toronto, will build four stores and dwellings at a cost of $15,000.

The Ashdown Hardware Co., Winnipeg, will erect a branch warehouse at Calgary.

At Toronto, Schultz & Garrett will spend $18,000 on three stores and dwellings.

The Leeson-Dickie Grocery Co., Vancouver, will erect a new six-storey business block.

The National Drug Co., Calgary, are to erect a three-storey warehouse at that place.

The Knechtel Furniture Co., of Hanover, Ont., are excavating for a $25,000 warehouse.

J. N. Pomerlean, of the Richelieu hotel, Edmonton, will build a new hotel in Melville.

Shaw & McNeil, architects, want tenders for several cottages to go up in Fort Rouge.

Four pairs of brick dwellings to cost $20,000 will be built at Toronto by Wilkins & Co.

Edward Brown, of Portage la Prairie, will erect a $30,000 residence at Armstrong's Point.

Boyle & Crozier, Brandon, will have a three storey solid brick hotel erected at Carnduff, Sask.

The Dominion Bank intend to erect one of the best bank buildings ever built in Calgary.

Two pair of semi-detached dwellings to cost $10,000 will be built by A. E. Fisher, Toronto.

Copping Bros., Winnipeg, Man., have the contract to build two residences there costing $8,500.

The Reformed Baptist Alliance proposes to erect a new hotel at Beulah, near St. John, N. B.

The Bank of Montreal has purchased a site for the erection of a new branch building at Port Arthur.

Four attached stores and dwellings will be built by W. M. Rankin, Toronto, at a cost of $12,000.

Six attached stores and dwellings will be erected at Toronto by G. L. Thompson at a cost of $18,000.

Mrs. Mary E. Looby, Edmonton, is to have a two-storey office and store block erected at a cost of $16,000.

Logan & Black, Yorkton, Sask., have been awarded the contract to erect four houses costing over $10,000.

Architect Matthews, Winnipeg, recently took tenders for erection of apartment block for W. G. Willoughby.

McQuarrie & McLeod are the contractors for the new $157,000 Breadalbane apartment block at Winnipeg.

Geo. H. Archibald & Co., Winnipeg, have the contract to erect a six-storey building for W. R. Hull, at Calgary.

Court houses are to be built by the Alberta authorities at Claresholm, Medicine Hat and Fort Saskatchewan.

Recent building permits at Hamilton include: E. New, dwelling, $2,200; W. Theaker, house, for G. C. Hoar, $2,000.

Darling & Pearson, are preparing plans for a Canadian Bank of Commerce branch building to go up in Fort Rouge, Winnipeg.

The Imperial Realty Co., Ottawa, took out a permit for its new apartment building there. The cost is to be $225,000.

The Royal Bank proposes enlarging its present Halifax quarters. The new building will cost in the vicinity of $125,000.

R. Vancamp, Edmonton, has taken out a permit to build a $3,500 house. E. J. Taylor will build a $5,500 brick residence.

Architect Atchison has plans nearly completed for an office building at Winnipeg to cost $50,000. Work will be begun at once.

The following will build residences at Foxwarren, Man., this season: R. Myers, Mrs. John Leckie, O. Burdett and W. Boyd.

W. Luttas has the contract for the construction of a parsonage for St. John's Methodist Church, at Winnipeg. Cost $4,000.

The following will erect residences at Lumsden, Sask., W. B. Watkins, Ed. Cooney, W. J. McAlmond, Wm. Kinnon, and A. G. Hunter.

A permit was issued at Vancouver for $11,000 to A. C. Flumerfelt, who will add two more storeys to the warehouse he is erecting there.

The Brantford Real Estate Co. will erect three three-storey buildings on Dalhousie Street, and a two-storey building on Darling Street.

The following will erect dwellings at Winnipeg; E. W. Andrews, $9,000; J. Isenberg, (six), $10,000; J. Isenberg (ten), $18,000; G. T. Goodmundson, $3,000.

The following residences will be built at Winnipeg this season: D. H. Car-Camichael, $2,000; A. Scobie, $2,000; M. Jordan, $5,500; L. Buchanan, $3,000; H. C. Moncreith, $9,000.

A syndicate has been formed of local business men and officials of the Grand Trunk Pacific to build a hotel at Wainwright, Sask. The building is to cost $35,000.

An $11,000 addition will be built to A. C. Flumerfelt's new brick warehouse at Vancouver, and a frame residence to be built for N. S. Logan, will cost $9,000.

The contract for the erection of a five-suite apartment block for J. A. McRae has been let to F. H. Webb. The building is a two-storey one. The contract price is $18,000.

The Manse Committee of the Blenheim Presbyterian Church has awarded the contract for the erection of a new residence on MacGregor Street to H. Collar. Estimated cost $3,500.

J. Dodson, baker, will build a $55,000 store, at Vancouver; Capt. Pybus an $11,000 structure, and alterations to a business property owned by Evans, Coleman & Evans will cost $13,000.

J. Dodson, stores and office building, $55,000; Capt. H. Pybus, store and office, $11,000; Evans, Coleman & Evans, $13,000, are the three largest building permits issued at Vancouver last week.

The following are recent building permits issued at Ottawa:—F. J. Farrell, frame dwelling, $2,000; A. Dworkin, dwelling, $3,200; A. Kert, alterations to dwelling, $1,000; E. Gingras, brick apartments, $2,800; John Lytle, dwelling, $1,800; Fred Deamend, dwelling, $1,200; J. R. Douglas, dwelling, $3,500; J. H. Maroney, dwelling, $2,000; S. J. Davis, double house, $3,500; John Davis, two stores, $6,000.

Building permits at Vancouver recently issued are:—W. C. Marshall, dwelling, $1,700; Alexander & Potts, dwelling, $1,800; R. Mills, dwelling, $2,500; R. Mills, dwelling, $2,500; Charlie Chin Wing, dwelling, $2,500; H. Creelman, $1,000; Beard & Copeland, dwelling, $2,500; Dr. Richardson, dwelling, $2,500; Dr. Richardson, dwelling, $5,000; R. H. McDonald, dwelling, $3,600; A. C. Flumerfelt, $11,000; W. H. Huggnell, dwelling, $1,000; F. Graham, dwelling, $1,500; Vernon Bros., dwelling, $2,200; D. Lewis, dwelling, $2,500; St. Mark's Church, Grandview, $1,000; T. C. Larney, store and dwelling, $1,760; James Millar, (2) dwellings, $2,800; W. H. Lyne, dwelling, $2,300; Thomas McConaghy, dwelling, $1,000; S. S. Heddle, (2), dwellings, $3,000; Thomas Evans, dwelling, $2,900; J. E. Braithwaite, dwellings (3), $3,000; M. A. McLeod, dwelling, $2,000; J. Stansby, dwelling, $2,000; M. S. Logan, dwelling, $9,000; Mrs. Blygh, dwelling, $2,500.

have been more severely felt, both in

Public Buildings.

James Reed, of Digby, N.S., has been awarded the contract for the erection of a new school building at Springhill, N.S. The building will be modern in every respect, and will cost about $55,000.

The Saskatoon city council have withdrawn their objection to the location of the new C.N.R. station on First Avenue. A space of twelve feet is to be left between the building and the street line. The contract has been let to Sam Brown, of Winnipeg, and work is likely to proceed at once.

The contracts for the Chatham Collegiate Institute addition have been let to Hugh Gallagher & Son, for $16,343. Park Bros. have received the contract for a larger boiler to replace the present one in connection with the heating system. The board of education decided to instal the Gurney ventilating system, involving an extra cost of $335.

The plans of Storey & Van Egmond, Regina and Saskatoon, have been accepted by the High School Board for the new Collegiate Institute to be built at Saskatoon this year. The estimated cost of the building is $90,000, which, with site and equipment, will total $125,000. It will contain all the class rooms, lavatories and equipment, gymnasiums, bath rooms and recreation rooms, which are necessary in a high educational institution. Tenders are to be called for as soon as specifications can be got out.

PLUMBING AND HEATING MARKETS

MONTREAL.

June 29.—A very bright tone characterizes plumbing and heating lines. Not only are the markets stiffer, but orders are coming in very freely. The only drawback to the present fine trade is the fact that consumers want their goods at once, and of course all cannot get this. We anticipated such a congestion some time back, when it was evident that consumers were buying from hand to mouth. No stocks have been accumulated, and with building activity on the boom all over the country, users are hard put to for material. It can be understood that the shipping departments of the various houses are exceedingly hard pressed and in many cases outside help has to be requisitioned.

The improvement in the demand is noticed not only locally but all over the country. Three Rivers, for instance, is buying a lot of material. Soil pipe is going exceedingly well, and so are radiators and boilers. No changes in prices are announced with the exception of boilers and radiators. The manufacturers have at last got into line, and the discount is now 50 and 10 f.o.b. Montreal.

Plumbers are now getting very busy. Many houses started at the commencement of the spring are ready for them, while prospects look exceedingly healthy. There is a decided opinion that things are shaping towards a great fall business.

SOIL PIPE—A very heavy demand has sprung up. Stocks in consumers' hands are light, and now that material is wanted at once, there is a rush on the supply houses for the stuff. Heavy lots are not only going out locally but to all parts. There is no change in prices, but there seems to be a probability of higher prices if raw material continues to advance. We quote: Light, 3 to 6 in., 60 off; medium to heavy, 2 to 6 in., 70 off; 8 in., heavy, 40 off.

LEAD PIPE—Lead pipe is selling very well, and heavier orders in the near future seem assured. The market is firm, and the following prices still obtain: Pipe and waste at 27½ off; traps and bends at 50; calking lead at 5c. per pound.

SOLDER—Solder is very active. Consumers are stocking up a little more in anticipation of a good season. More roofing work is now being done, and altogether a good consuming demand for solder is showing. The market is unchanged, and we quote 19½ for half and half and 18½ for wiping.

IRON PIPE.—Large orders are swinging out, and there is a very satisfactory tone to the market. The better conditions across the border are also helping matters. Some heavy lots of pipe have left for outside points. We continue to quote: Discounts, ¾-in. to 4-in., black, 72½ off; galvanized, 62½ off.

RADIATORS AND BOILERS.—A decided stimulation is noted in these lines. Some large orders have been booked, and fine trade is opening out. The tone of the market is very good indeed, and everything looks favorable for a very fine year. The manufacturers have at last got into line and radiators and boilers are quoted at 50 and 10 instead of 60 off, f.o.b. Montreal. Steamfittings are still at the old discount of 70.

BRASS GOODS.—No change is announced in brass goods although the market is firmer in tone. The demand is very good, and prospects look hopeful. We continue to quote: Compression work, high grade, 60 and 10 off; standard, 70; fuller 75 off.

ENAMELWARE.—Jobbers are not overburdened with stocks, and with the demand that is now showing are rushing the manufacturers on certain lines. No important price changes are announced, and the market on the whole is firm.

METALS.—There is no change in the metal situation. The consuming demand is very good, but the primary markets are fluctuating rather badly except in the case of spelter. We quote: Ingot copper, 14¼c.; ingot tin, 32½c. to 33c.; lead, $3.65; pig iron, Middlesboro No. 3, $16.50 to $16.75; Summerlee, $18.75. Heavy scrap red brass is 10c.; light copper 10c.; heavy lead, 2¾c.

TORONTO.

"Business is very good just now, and all our men have work ahead to keep them going to well on towards the close of the year," said a prominent master plumber. "Most of the work is in new houses, and we have had to delay sending men out on repair jobs, because of this new work."

Plumbing supply houses, too, report splendid business, both in the city and country. Prices on the whole are firmer than early in the year, though for large quantities of iron pipe an easier quotation is given because of the amount of foreign pipe offered for sale in Ontario. Two lines of enameled lavatories also show a decline. Other lines, however, while not advancing, are ever so much firmer than formerly.

The news of the week is probably the advance in heating lines. Hot water and steam boilers, and all patterns of steam and hot water radiation have advanced. How this advance will affect trade is conjectural, as a great quantity of heating goods have been booked for future delivery at the low figures, and there are sufficient orders ahead to keep manufacturers busy for months yet to fill and ship properly.

IRON PIPE AND FITTINGS—While quoting the old figures of $4.54 of 1-in. black pipe, and $6.19 for 1-in. galvanized, some houses are selling five off these prices when large quantities are placed on order. There is a big demand for pipe, but the large offering of U. S. pipe at low figures is said to cause the easier prices here. Malleable fittings are unchanged at 40, and cast iron fittings are yet at 70 per cent.

ENAMELWARE—There has been a decline in two grades of lavatories. The 18x21 oval bowl has been reduced from $5.15 to $4.50; and the 18x24 and 20x 24 lavatories with apron basins from $10 to $9. Trading is active, both country and city are buying in fine lots.

HEATING LINES—Boilers and radiators have advanced and are now about the figures they were before the cut of several months ago. On June 22 the prices were withdrawn and new quotations substituted. Hot water boilers are now 50 and 10, and steam boilers 60 and 10. Wall radiators (new prices) are 50 and 10; hot water, 50 and 10; and steam 50, 10 and 2½. Angles and curves are about 25 p.c., and other specials proportionately. The trade is getting into the rush season and sufficient orders are still on hand to keep manufacturers busy for months to come. Of course, a lot of booking was placed at the old figures and it is really new work yet in prospect that the new prices will affect; so most of the work this year yet will be at the low figures.

BRASS GOODS—Just about normal is trade in brass goods. Prices are unchanged, though the expectation is gaining ground that they will advance in September.

SOIL PIPE—Good orders have been placed and the trading is satisfactory to supply houses and manufacturers. Prices unaltered.

LEAD PIPE—Quietly steady is lead at unchanged quotations.

SOLDER—Half-and-half is 19c, and wiping one-half cent less, the quotations ruling for some time past. Demand is heavy, but stocks are large.

CANADIANS AT DETROIT CONVENTION.

Ed. Higginbotham and Alex. Cameron, Fort William, not having received notice in time that the proposed meeting of Ontario master plumbers at Windsor had been called off, attended the convention of the N.A.M.P. at Detroit last week. Mr. Cameron is making a fortnight's visit to the City of the

Straits, while Mr. Higginbotham, finding no meeting on at Windsor, came on to Toronto, to transact some business for the Plumbers and Engineers Supply Co., Port Arthur, of which he is a member.

John Watt, Chatham, was another master plumber who visited Detroit during the convention, while Jack Birchard, representing the King Radiator Company, Toronto, was the only Canadian salesman on the job, he being well equipped with the needful and on the lookout for Canadians who wanted a guide in a strange city.

Clarence Booth and C. H. Coleman, formerly of Toronto, were in charge of the Pressed Steel Sanitary Manufacturing Company's exhibit of stamped steel enameled tubs and renewed many acquaintances.

L. A. Cornelius, President of the Wolverine Brass Works, Grand Rapids, Mich., and Chatham, Ont., had one of the finest exhibits in the hall and everyone who registered was put "on the level" with a beautiful nickeled leveling glass souvenir.

F. A. Black, E. A. Wright and J. J. Lassaline, three Canadians, were in charge of the exhibit of closet combinations and sectional bookcases made by the Detroit Milford Sanitary Manufacturing Company.

W. H. Kimche, of Montreal, was associated with his father and brother in exhibiting the Kimche Kimbination fitting.

C. N. Marcellus, Grand Rapids, who is patenting his "American" porcelain water closet in Canada, was also an exhibitor along with such old friends of Canadian plumbers as the Mueller Manufacturing Company, Decatur, Ill.; the Glauber Mfg. Co., and United Brass Manufacturing Company, Cleveland, and the Ideal Manufacturing Company, Detroit and Windsor, with Paul Smith formerly of Toronto, in attendance on the last named exhibit.

The editor of The Plumber and Steamfitter acknowledges many courtesies extended by delegates and manufacturers' representatives at the Detroit convention.

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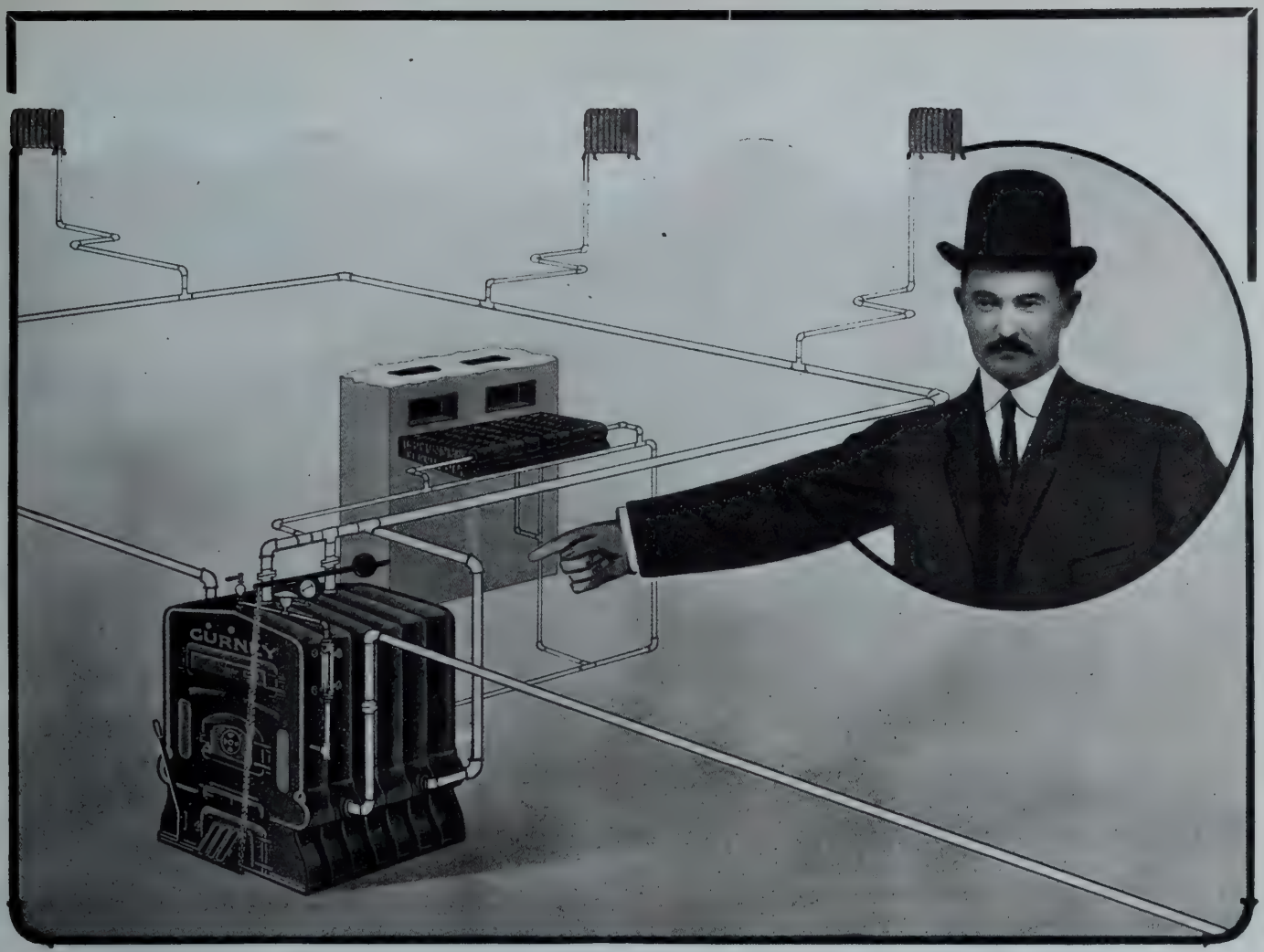

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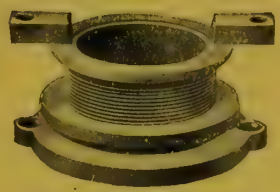

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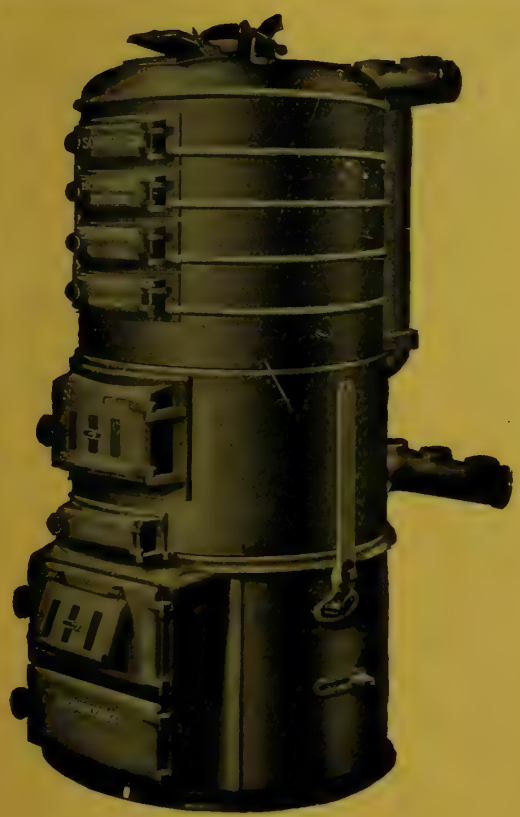

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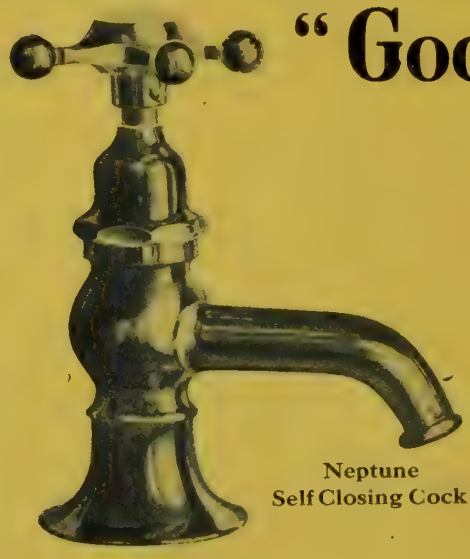
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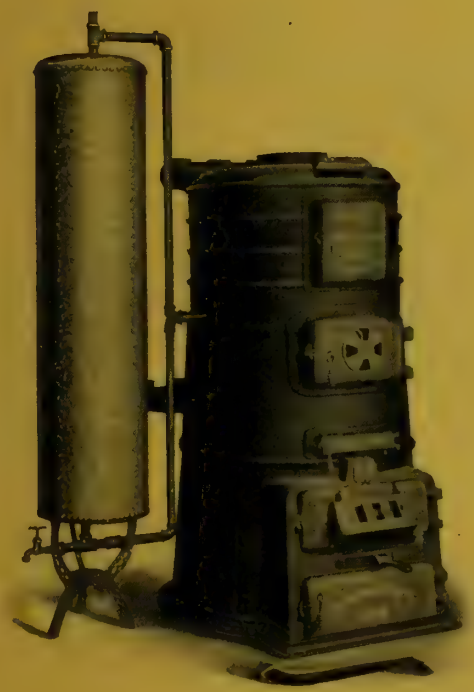

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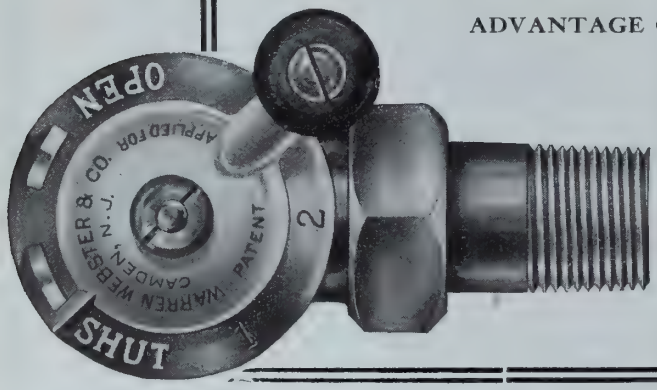

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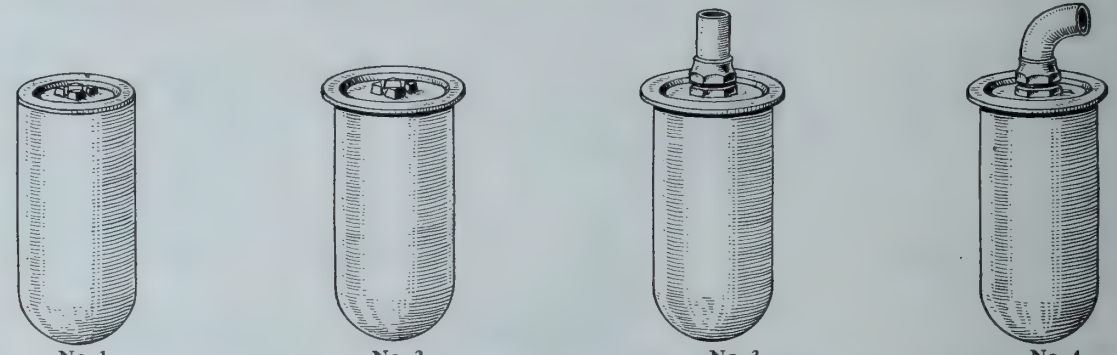

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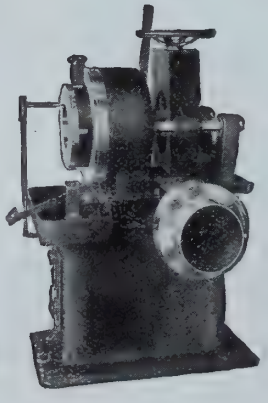

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TORONTO, JULY 15, 1909

THE PLUMBING SUPPLY HOUSE A NECESSITY.

Canadian master plumbers interviewed by The Plumber and Steamfitter do not agree with the position taken by the Detroit convention of the U. S. Master Plumbers' Association in declaring in favor of eliminating the jobber and doing business with the manufacturer direct.

Large plumbing firms may, it is held, be able to buy in sufficient quantities to warrant buying direct, but to the average firm the supply house is a necessity, acting in the capacity of an assembler of goods and a storehouse from which the master plumber can draw supplies as required from job to job.

The experience of the master plumbers of Port Arthur and Fort William is interesting in this respect. Formerly plumbing firms in those cities owing to their distance from the market carried supplies in stock amounting in value to from $3,000 to $12,000, and in one or two instances up to $15,000. Yet they frequently had jobs held up from a week to a month pending the arrival of shortages ordered from eastern houses. Buying in large quantity from manufacturers did not pay, they also found, as it entailed the investment of money needed in paying workmen and carrying on the business when undertaking large contracts.

As a result of their experience they have organized a joint stock company which will carry a stock available to be drawn upon by the master plumbers between Sudbury and Winnipeg, it being their intention to put travelers on this territory. The individual firms taking stock in the company will pay regular trade prices for goods wanted, their saving being in interest on the reduced capital investment, it not being necessary for them to carry more than $1,000 or so worth of goods in their sample room and workshop. Instead of eliminating the jobber, as the U.S. plumbers seem to favor, the master plumbers at the head of Lake Superior have established a jobbing house, not as a co-operative concern but on a straight business basis, to compete with other supply houses in the matter of price and prompt delivery of goods.

A master plumber in a Western Ontario city writes stating that he has no special love for the supply houses as they seem to be encouraging, rather than discouraging, the cutting of prices on contract work. Nevertheless, he says, he finds it necessary to support them as he cannot buy in large enough quantities to get special prices from the manufacturers and it is more convenient to do business with one or two firms than a dozen.

General opinion, therefore, seems to agree that the supply house that gathers together the goods needed by the master plumber and is prepared to supply them as required for each job is indispensable not only to the master plumber but to the manufacturer as well.

The point raised by the Western Ontario correspondent is worthy of consideration. The supply houses, in their own interests, ought to do everything possible to protect the master plumber who is trying to get a fair price for the work he does. In fact, The Plumber and Steamfitter takes the position that it would pay the supply houses to inquire into the prices customers are securing for contract work and where the price is not sufficient to pay for the labor and material, plus a margin of profit, sales should be discouraged.

"Our losses for bad debts have not amounted to $5,000 during the past four years," was said several years ago by a Toronto supply man, but it is safe to say none could claim such a record in recent years. On the other hand the supply houses have been getting hit for heavy losses from firms failing or decamping, master plumbers have been losing money on unprofitable jobs taken in competition with price cutters, and the public have been getting shoddy work and substituted materials.

It is time for a change and the supply houses should take the lead in a campaign for improved conditions for Canadian master plumbers.

NOVEL APPRENTICESHIP ARRANGEMENTS.

The plumbers at Rochester, N.Y., are working under a rather unique arrangement in the matter of apprentices. All apprentices are working under an approved form of application for position with the master, the apprentice agreeing to serve four years at the trade with this particular firm, the minimum and maximum wages are mentioned, also the number of hours to be worked by each. The master agrees in turn to teach the apprentice all the different branches of the trade, etc. Should the master desire to release him to another shop, he is given back his application with recommendation properly filled in on the back of same as to his efficiency and length of service, which application he then files with the master who next employs him.

While it is a new scheme and has only been in use about six months, it is found to work satisfactorily to all concerned, as it has a tendency to impress upon the apprentice his responsibilities, and at the same time keeps out the undesirable from becoming advanced in the trade by jumping from one shop to another and in time becoming a detriment to the trade.

PRACTICAL PHILANTHROPY.

A man who located at New York twenty-five years ago and has made a handsome fortune not long ago received a request for money to help build a country church. In reply, he asked to have a drawing of the proposed church sent to him, and they wrote that they had no drawing, but that a well-known carpenter in the neighborhood would build it. He then informed them that he had no money to contribute to a country church built by a country carpenter, but that he would have an architect draw a plan far a proper building, and he would present that to them if they would accept it. They accepted it, and he became more interested, and his contribution was very much larger than it would have been for a plain old church of repulsive architecture ; and the neighborhood secured a building that is an ornament and a joy.

The same man was asked to give scholarships to help girls who had been turned away from a private school because they could not pay the small fee. He replied by asking what the sanitary arrangements in the school building were, and he discovered that they were very bad, so bad, indeed, that there had been cases of sickness that had been directly traceable to the lack of good sanitation. When he heard this, he declined to help toward the admission of more students to such a building, but he offered to pay the expenses of plumbing for it. Now the sanitation of the school is spoken of by all its friends as one of its chief attractions.

This man gives ideas along with his money, and the money, therefore, goes much further for real human betterment.

ADVOCATE MODERN SCHOOL PLUMBING.

A few weeks ago the St. Marys (Ontario), Journal was commended for its public spirit in condemning as unsanitary and disease breeding one of the public schools in that town, the paper taking the progressive stand that no modern innovation should be considered too expensive to protect the health of the young children attending our public schools.

A decade or a generation ago outside privies and unventilated schools may have been excusable but to-day it is a public duty to provide the most modern apparatus in the way of sanitary conveniences, heating and ventilation and fire escape equipment. One epidemic of infectious disease or one holocaust, such as the school fires at Montreal and Collinwood (Ohio), should be enough to teach an unforgotten lesson—the lives and well-being of the rising generation should be of greater importance than the wails of chronic grumbling property owning taxpayers.

In connection with the St. Marys Journal articles The Plumber and Steamfitter suggested that master plumbers throughout Canada draw the attention of local editors to out-of-date sanitary or heating equipment in use and offer the editor the benefit of their knowledge and advice if he undertakes an agitation for public improvements.

In this issue several articles written by capable and experienced writers describe what features go to make up modern school plumbing. Would it not be a practical thing for you, Mr. Master Plumber, to read these carefully and then make a quiet inspection of the schools in your district and draw attention to the defects through the medium of your local editor or in a personal letter to the school board, figures being given showing the cost of installing proper equipment. Such action, in addition to bringing you work not likely to be done otherwise, will also bring you some good advertising.

A summary of important considerations necessary to modern school plumbing has recently been drawn up by John K. Allen as follows :

1. Toilet rooms should not be put in basements. It is better practice to place them in a semi-attached but independent building on the ground level. It is still better practice to construct two toilet rooms on each floor. It may prove to be the best practice to construct smaller toilet rooms opening from each school room.

2. Toilet rooms should be adequately supplied with natural light.

3. Toilet rooms should be fully and positively ventilated.

4. Toilet room walls should be of light color, impervious to moisture, washable by a stream of water from a hose nozzle.

5. Latrine closets should not be allowed in new buildings and when existing in old buildings should be replaced by individual closets.

6. All faucets, ball-cocks and valves should close tightly to prevent water waste.

7. Urinals should be of individual pattern, of impervious highly glazed material, with pool of flowing water at bottom.

8. Urinal backs should be covered with a thin, unbroken, flowing film of water.

9. Lavatories should be individual, and not stand too high.

10. Water supply for school drinking purposes should be through bubbling fountains. No commonly used drinking cups should be permitted.

HOT WATER HEATING HISTORY.

The hot water system of heating houses is nearly two centuries old, the first successful trial of hot water having been made about 1716 by Sir Martin Triewald, a Swede, who resided in England, says Shoppell's. He devised a method of heating a greenhouse by hot water. The water was boiled outside the building and then conveyed by pipes into a chamber under the plants. The first attempt at hot water heating on a large scale was made in France, in 1777, by M. Francis Bonnemain, in an apparatus for hatching chickens for the markets of Paris. It long remained as a model for many heating plants planned and erected.

Hot water heating was not introduced into America until about 1850, and it was 1875 before it was taken up by engineers and artisans generally. Since 1890 its use has grown very rapidly. It is cleanly, healthful, economical, and easily regulated, and air so warmed has a delightful effect on the body. In arranging for a hot water heating plant, the fitter should insist that the apparatus provided have ample capacity. It will give better results to work a large plant at a moderate temperature than a small one at its maximum capacity.

NATIONAL M. P. A. OFFICERS.

President, J. A. Gordon, Montreal; Vice-President, Joseph Laurier, Montreal; Treasurer, Harry Mahoney, Guelph; Secretary, H. W. Munday, Montreal.

Provincial Vice-Presidents—Ontario, George Cooper Toronto; Quebec, Jos. Thibeault, Montreal; Nova Scotia, F. Dexter, Truro; New Brunswick, D. J. Shea, Fredericton, Manitoba; A. J. Hammond, Winnipeg; Alberta and Saskatchewan, E. J. Young, Calgary; British Columbia, A. C. J. Weeks, Vancouver.

Chairmen of Committees—Sanitary, P. C. Ogilvie, Montreal; Legislative, H. A. Knox, Ottawa; Apprentice, James Griffin, Montreal; Essay, H. L. Chandler, Ottawa.

Lessons Learned at Recent Conventions

Reports of Committees at Plumbers' Convention at Detroit and Steamfitters' Meeting at Niagara Falls Make Interesting Reading For The Canadian Trade—Plumbers' National President Refers to Organization Work in Canada—Practical Work Being Done to Protect Master Plumbers From Liability for Accidents to Employes, Etc.

Legality of Association Work

President Halsey, in his address at the Detroit convention of the N.A.M.P., had the following to say regarding the controversies between the master plumbers associations and the law courts:

In view of the number of indictments, damage suits and investigations, some member may question the legality of the National Association. The National Association does not do any business, was not incorporated for profit, and forbids all agreements regulating prices The members are free to compete among themselves. There are no written or verbal agreements between the National Association of Master Plumbers and the manufacturers and jobbers or their associations, either as to the sale of goods or prices.

In the injunction proceedings brought by a plumber named Walsh against the St. Louis Master Plumbers' Association and a number of the manufacturers and jobbers of St. Louis the court said:

> We think it is competent for the court to declare the agreement complained of as illegal and void, and to restrain the parties to the agreement from keeping its terms or demanding that they be kept, and thus leave the respondent corporations and each of them free to deal or not to deal with appellant, as they may choose. In so far as it appears from the allegations of the petition, the Association of Master Plumbers is not an illegal association. Presumably it was formed for the purpose of mutual protection . . . We see nothing, therefore, in the petition that would authorize a court of equity to dissolve the association.

It is only natural to desire the strongest kind of trade protection—protection in accordance with the views of the so-called radical element of our association, who believe that the members of our association should be protected to the exclusion of the non-members. It is quite true that there are a few worthy master plumbers—and I believe there are only a few—who do not seem to appreciate the legitimate trade protection of national membership to a sufficient extent to support the movement by their affiliation. A few, I am sorry to say, have dropped out because they could not support measures adopted by their locals. It is not necessary for me to here to review or comment upon the many advantages of membership and the need of co-operation to improve and maintain the standard of the plumbing business.

Our association is to-day, notwithstanding our troubles in the courts and the unjust criticism of the yellow press, the most businesslike and legal and yet the best protected business in the country. Our organization has been held up as a model in Canada, Great Britain and Mexico. They are following our footsteps in England. They had a very good association in Canada, but they seem to have overstepped the bounds of legitimate associated effort, and with disastrous results. Let us be determined in maintaining our proper rights as business men and retail merchants, and yet not go too far and abuse our powers. We now enjoy the respect of the public, and hold the admiration of other business organizations. We very frequently hear others say: "If we were only organized as the plumbers are." It is only by the yellow journals, and by the ignorant that our motives are assailed. Even our friends like to have their jokes on the plumber.

In a June edition of one of our trade papers there is an interesting editorial on this very question, I which I take the liberty of quoting:

The Dissatisfied With Associated Effort.

> "The greatest benefit to the members of any association is derived from the legitimate use of its powers. Notwithstanding that the indisputable correctness of this fact has been demonstrated, there are those not sufficiently generous to accept such benefits and contribute their support to the method of obtaining them. They refuse to give the support because they recognize that the power of the association cannot be utilized for purposes which, if not directly under legal bands, certainly are unworthy of moral support. It has been pointed out frequently that the greatest draft upon the energies of the association leaders comes, not from the needs of the commendable purposes, but rather to satisfy a selfish and discordant element whose aims and purposes would surely lead the organized body into straits and difficulties from which it could hardly be extricated. Periodically the clamor is raised against some well established organization because it fails to attempt to accomplish things wholly without its province. As frequently the explanation is made by those who fail to give their support to associated effort and co-operative work, that what they have asked to have done has received no attention and the wrongs which they have presented have remained unrighted, notwithstanding the fact that a closer investigation of the true conditions would invariably show that what was asked was impossible. The very men who refuse their support manifest the greatest ignorance as to the history of the investigations that have been made by different leaders of the very matters on which action suited to their personal desires is sought. If those who fail to take part in co-operative movements would devote sufficient time and attention to the movement to become familiar with past experience and conditions they would see the light, and would become familiar with the substantial advantage of the labors of others which they enjoy without contributing anything from their own efforts."

Sanitary Legislation.

The report of the secretary of the Legislative Committee was as follows:—

While there is a diversity of opinion as to the value of plumbing legislation in bettering the financial condition of the master plumber, it would seem that the majority of those from whom I have received replies are of the opinion that plumbing laws have been financially beneficial to the trade.

It is true that there are a number who consider the law harmful to the man who does high grade work, in that it robs him of his natural prestige, as the public is inclined to feel that under the law all work is of equal quality and feel secure in the protection afforded by the law rather than depend upon the reputation and responsibility of the master plumber.

It is the opinion of many that the public has everything to gain and the plumber all to lose through plumbing legislation, as the legitimate plumber, who has struggled for years, and achieved a reputation for first-class work is forced to compete with the curbstone plumber, who will find some means of evading the law or blinding the eyes of the plumbing inspectors.

In some of the States of the South, except in the larger cities, there are no laws governing plumbing, and the opinion of the master plumbers regarding the advisability of advocating sanitary legislation seems to be divided. It has been held by some of those with whom I have corresponded that in localities where they have no regulaions on the plumbing question it has not worked any benefit to the master plumber. It has been stated by some that plumbing legislation in small towns is more or less of a farce, as the volume of business is not sufficient to keep a competent man busy, and the work of enforcement and inspection is delegated to the town marshall, or someone equally incompetent, with the result that the law is really injurious instead of beneficial. It is claimed, however, by the officers of the Illinois State Association, that the plumbing law in the smaller towns outside Chicago is a good thing for the master plumber and has been of financial benefit to all of them. Recently they have had an amendment adopted by the State Legislature to the law, which requires the master plumbers to renew their certificates annually, and this in certain sections may prove of some benefit.

Sanitary Laws Here to Stay.

While I have not heard directly from the other members of the committee as to what success they had in securing an expression from the members in the various territories asigned to them, I presume the general tenor of the replies has not been much diffierent from those which I have personally received. While I fully realize that a considerable portion of our members, some of whom are among the most enlightened and brightest men in the trade, are firmly convinced that plumbing legislation has been to the financial disadvantages of the responsible and legitimate master plumber, the majority of our members believe that plumbing laws have not resulted to the financial deteriment of the trade. It can scarcely be denied; in fact, the opinion is general, if not unanimous, that in cities of 25,000 or over the law is a material benefit in raising the average grade of work, and also largely increasing the volume of work done. No matter what we do or think, it is my belief, while I have been forced to view the bad effect of plumbing legislation, that sanitary laws are here to stay.

The national State and municipal governments appreciated the value and necessity of sanitary laws and health ordinances, and any attempt on the part of the master plumber to discourage the adoption of sanitary legislation would be foolishness indeed. If the legitimate master plumber has suffered financially from plumbing laws, we all know it is because of the laxity shown in their enforcement. In its final report at the last national convention, the Legislative Committee held that local and State laws are beneficial to our members when properly administered, and should be maintained, and I would recommend in closing that not only should all such laws be maintained, but it should be the aim and purpose of our association to see that they are honestly administered and enforced.

Report of Insurance Committee.

The report of the Committee on Insurance showed that much earnest and effective work had been done during the year toward the desired end of securing a lower rate for employers' liability insurance, thereby enabling master plumbers more generally to avail themselves of this form of protection.

Among the many hazards of the plumbing business the fear of injury to workmen is a cause of constant anxiety to the employer for the reason that a slight or even fancied injury may be made the basis of a demand on the part of an unscrupulous workman that the employer pay damages or stand the cost of suit. Such demands are after all little short of blackmail, the workman knowing that his employer will probably settle out of court rather than stand the cost and annoyances of a lawsuit. For this reason master plumbers would, as a rule, gladly avail themselves of the protection of employers' liability insurance if the rates made by the insurance companies bore any reasonable relation to the actual risk taken by plumbers in the pursuit of their calling. Hitherto the rates have been unreasonably high, but through the efforts of members of the committee rates already have been considerably reduced in certain localities. The importance of this matter was properly called to the attention of state officers prior to the annual state conventions with the result that the subject was thoroughly discussed at most of the conventions held last winter and interest among the members greatly stimulated. Committees were appointed by most of the associations to co-operate with the National Committee in an effort to secure rates which will be just and equitable to insurer and insured.

Chicago and St. Louis master plumbers have secured a reduction of fity cents per hundred dollars in the cost of liability insurance, and now pay $1.00 instead of $1.50, with the possibility of further reductions if they will act as a unit. Chairman Byrne, in urging the necessity for standing together on this proposition, said in his report: "If our members ever expect to gain any lasting benefit they will have to learn that it is absolutely necessary to support their committees, even though they find that it may seemingly cause them a little extra expense at the start, as it is only by such seeming sacrifice that good results can be obtained.

"There are, of course, cases where, for good personal reasons, it might be advisable for a man to give his business to to an outside broker, but in most cases our members should at least insist upon the broker placing the business with the company who are favoring our cause."

In concludig his report, Mr. Byrne thanked the different members of the committee for their hearty co-operation and for the interest they have taken in the work, particular commendation being given to Wm. N. McKenner, of Boston, for his work in circularizing the State of Massachusetts and his success in having the rate reduced to ninety cents.

Essay on Liability Insurance.

On the same subject as the Insurance Committee was a practical address by G. A. Richards, Grand Rapids, Mich., some of his points being reproduced as follows:—

"While we may decry the necessity of protecting ourselves with liability policies our very business life and credit are jeopardized, if we do not, for we are now held accountable under the law for accidents caused by the carelessness of fellow servants and other conditions beyond our control.

"To illustrate: We are liable for injury caused by an incompetent and unskillfull fellow employe, if it can be proven that the employer did not use due care in selecting such empolye.

"Workmen assume only such risks as are incident to their employment and which are apparent to others; they are not presumed to look for hidden dangers

or defects and they may recover even though they knew of such defects and were not protected against them. A young person may not be exposed to danger, although the danger would be obvious to an adult of ordinary intelligence.

"You may be sued by a person not in your employ, if the injury was caused by the negligence of your employe or because of a defective condition on or about your premises.

"Your delivery horse may run away; you are liable for the damage resulting.

"A drain layer and his helpers may be buried in an excavation that he had full authority to properly curb. You may have supplied all necessary materials and given positive instructions for their use and still be held liable and mulcted for damages. It is your duty to see that he does use the materials supplied.

"A citizen may fall into a trench, and it is up to you to prove that it was properly guarded and lighted and that there was no contributory negligence on your part.

"In all cases where the evidence is in any way conflicting on a material point the question is for a jury. You can easily guess where an employing plumber would ordinarily get off."

As a remedy for the hazard of doing business under our present system of employers' liability, Mr. Richards urged that the machinery of the National Association be used for gathering data as to the actual ratio of loss to payroll in the conduct of the plumbing business so that, having specific information on this subject, the association would be in position to demand an equitable rate from the insurance companies. Failing to secure such a rate Mr. Richards suggested that the association could, through its national organization, carry the risks of its members by means of a company organized for that purpose, just as the Retail Hardware Association carry their own fire insurance in mutual companies composed entirely of members of hardware associations.

One of the resolutions adopted at the Detroit convention called attention to the harm done by manufacturers in turning out goods of low grade as to material and workmanship. In specific terms the resolution called to account the manufacturer who made possible the "shoddy" plumber by putting before him the temptation to substitute cheap and inferior material. Manufacturers of soil pipe were asked to discontinue the making of "medium" grade pipe; the makers of wrought pipe were told what the honest plumbers think of steel pipe; galvanized boiler manufacturers were called to task for turning out a tissue paper product; the lead men received some hot shot on the use of scrap lead; brass goods manufacturers heard about "shoddy," and tank makers were told that piano polish didn't make up for flimsy lining, while the makers of brass pipe came in for a roast on the pipe that opens up on the seam and makes no end of trouble for the poor plumbers.

AT THE FITTERS CONVENTION. TION.

The report of the Ways and Means Committee of the National Association of Master Steam and Hot Water Fitters at their Niagara Falls convention, July 14 to 17, contained the following interesting clauses :

Separating Heating From General Contracts.

As to the matter of separating heating and ventilating work from the general contract for the erection of any building, whether public or private, we think it to the interest of members of this association, through their local and State associations, to use every effort at the present time to create public sentiment in this direction. The American Institute of Architects have the same matter under consideration, because they fear tne growing menace of the large general contracting corporations who finance the larger building corporations and who employ the architects, as well as the subcontractors. It seems to us that there is a better opportunity of separating heating and ventilating work from the work of the general contract than any other branch, and we believe that efforts tactfully put forth by our members through their local and State associations will meet with sympathetic assistance from the architects at the present time. Already some of our local associations have taken steps in that direction, and if all our members would make a special point of urging consistently the advantage of dealing directly with responsible contractors installing heating and ventilating apparatus in buildings, bringing out the fact that the general contractor's only interest is in securing the lowest bidder, whether he is competent or not to do the work, that there would be a very material increase in the amount of heating and ventilating work awarded to our members over what would be secured if we made no such effort.

Growing Menace of General Contractor.

If our members and other master fitters not members would decline to allow themselves to be used or traded upon by general contractors, there would be less complaint to make, if the local associations would get together and determine upon some set of regulations under which they would be willing to bid to general contractors, we believe it would go a long way toward helping the situation. Make the submission of a bid to a general contractor on the condition that if your bid is the lowest, and he is successful, you are to be awarded the contract ; and if he declines to agree to any such conditions, then we believe that if reputable master fitters would refuse to submit bids to such general contractor it would go a long way toward curing any complaints. Concerted action by our members in localities where we have a sufficient number of members would do a great deal toward straightening out the present complaints, but unless our members are willing to help themselves, standing unitedly against imposition of this kind the abuse is likely to continue. The real cure for it is that covered in our first recommendation, to separate heating and ventilating work from the general contract, so that we will be direct contractors on our branch of the business instead of subcontractors under any one.

Standardization of Fittings.

Your Committee will communicate with the committee of the American Society of Mechanical Engineers and the American Society of Heating and Ventilating Engineers and endeavor to have the three committees join in one common standard for fittings of all classes ; and that having reached an agreement standardizing the various fittings, the joint committees endeavor through their various societies and associations to reach some one or two prominent manufacturers and try to have them agree to adopt these standards provided our members give them sufficient business to warrant their going to the expense of changing the patterns. We believe by concentration of orders from our membership generally to one or two such manufacturers, it would not be long before other manufacturers would find it a profitable thing to meet the recommendations of these three committees on standardization.

PASSING OF THE PUTTY JOINT.

The Standard Sanitary Manufacturing Company, Pittsburg, has issued a 32 page and cover booklet entitled : "The Passing of the Putty Joint." It illustrates and describes the Standard ball joint closet flange, the printing and engravings being excellent samples of the printer's art. The printed matter is a strong criticism of connecting water closets to soil pipe by means of putty and the prophesy is made that within a year the closet with the putty joint will be as extinct as marble top lavatories, copper lined bath tubs or wooden laundry trays.

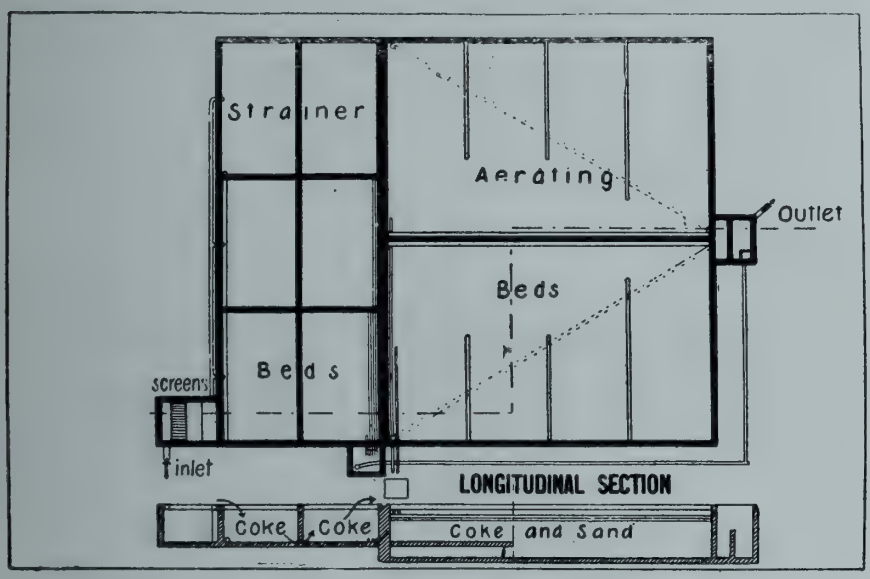
Sewage Disposal of a Public Institution

Prof. H. N. Ogden, of the New York State Department of Health, Describes a System Used to Care for a Building Having 240 Inmates.

The following interesting description of the construction and operation of the sewage disposal plant at the Western House of Refuge for Women, which is located at Albion, N.Y., a village in the north-western part of the state, about nine miles from Lake Ontario, recently appeared in Domestic Engineering. As the source, the quantity and the quality of the water supply make the construction of a sewage disposal system a necessity for institutions or residences in unsewered localities, a few remarks on this point will not be out of place in this case.

The water supply for the House of Refuge, as well as for the village of Albion, is furnished by a private company and is obtained largely from twelve artesian wells, each having a depth of 120 feet. In times of dry weather this supply is supplemented by water taken from Otter creek, three miles from Albion. The water from Otter creek is led by pipe to a filter bed of sand, ten to twelve feet deep, 100 feet long, 50 feet wide and about 250 feet from the artesian wells. From this bed it is supposed to filter into the wells. The water from the wells is collected in reservoirs and is pumped to the Albion Water Company's stand pipe, from which point it is supplied to the House of Refuge by gravity. The water taken from Otter creek has a disagreeable taste, rendering the supply undesirable; that taken from the wells is good. The daily supply to the House of Refuge is 15,160 gallons, or sixty-three gallons per head a day. About one-third mile of pipe conveys the water to the buildings of the House of Refuge, twelve if whose buildings have been connected.

The sewer system and disposal plant were built in 1898 and the present population connected with the system is 240, about twenty-three of whom are officers of the institution. The sewage is purified at present by partial aeration and filtration, though when the plant was designed purification was to be effected by thorough aeration, combined filtration. The sewerage system has a length of 3,500 feet and receives sewage from fourteen buildings. These buildings are used either as dormitories, schoolrooms or workhouse, and furnish a domestic sewage. The system is not underdrained.



Plan of sewage disposal plant at the Western House of Refuge for Women at Albion, N. Y. This plant has seen ten years of service.

The sewage first passes through a screen chamber containing two screens. The first is one of inclined circular, one-fourth-inch rods, spaced about three-fourths inch to one inch; the second screen is of woven wire, with about three meshes to the inch, both vertically and horizontally.

From this screen tank the sewage flows upon the surface of the strainer beds, there being three of these beds, four and one-half feet deep, and each bed being made up of two compartments separated by a wall having about eight openings the size of a brick at the bottom. The sewage flows downward through the first compartment of the bed and upward through the second compartment of the bed. In the first compartment a large uniform-sized coke is used, the coke being of the size of furnace coal and having a depth of three feet. The second compartment contains a coke of about the size of pea coal and of the same depth as the coke in the first compartment.

From the strainer beds the sewage flows over a weir into an open four-inch channel, built in the top of the concrete-covered division wall between the aerating beds, two in number, and the strainer beds. From this open channel the sewage flows the length of the aerating beds through one of the two perforated copper gutters hung along one side of the bed, by means of which it is distributed over the surface of the aerating beds. After filtering through the aerating beds the sewage collects in the outlet chamber, through which it discharges in a steady stream to the discharge pipe. After flowing through 720 feet of this pipe the sewage empties into a small unnamed stream just before it passes under the Erie canal.

The aerating beds are filled with coke, gravel and sand, and in the order given, from the bottom of the beds upward. The coke is four and one-half feet deep, the gravel three inches and the sand four inches deep.

As originally designed, air was to be forced through the strainer and aerating beds to assist in the oxidation of the organic matter in the sewage, but for more than a year past no air has been pumped into the beds.

The strainer beds are small and in three weeks' time have a depth of three inches of sediment on their surfaces, resembling fine ashes in appearance. Usually these beds are cleaned once in three months, but oftener it is longer. If the air pump were used daily, and if the straining beds were cleaned once every two weeks objection to the plant would probably cease, or at least decrease. On July 11, 1907, there was a decidely unpleasant odor in the vicinity of the beds. The enlarging of the perforations in the copper gutters would, probably, result in a more thorough distribution of the sewage over the aerating beds.

At the outlet of the sewer the invert of the outlet pipe is three and eight-tenths feet above the bottom of the of the culvert leading the small stream under the canal. Except in times of very hard rains this would leave the outlet pipe free from back water.

To maintain the plant as at present operated the services of the caretaker are required on an average of two hours each day. To replace the coke taken from the beds in cleaning ten tons are required annually.

The annual cost of operation was as follows:

Services of caretaker, at $7 per month	$84.00
Ten tons of coke, at $5 per ton..	50.00
Total annual cost	$134.00

Some Experiences with School House Plumbing

By E. H. Donahoe, Superintendent of Plumbing, Peoria, Ill.

I have had much to do with the planning and plumbing systems for this kind of buildings the last seven and one-half years since my appointment as Inspector of Plumbing of the city of Peoria, Illinois.

Shortly after my appointment I was called into some of the school buildings where they wished to make some alterations and repairs and found the sanitary conditions such that I called the Board of Health together and laid the matter before them as I saw it. The Commissioner of Health and myself were instructed to make a thorough examination and report back with what recommendations we thought proper, which we did. The outcome was that we condemned the sanitary arrangements and recommended an entire new system of plumbing, drainage and ventilation. This raised an awful row and I came in for censure mostly from some of the members of the building committee of the School Board. One of our master plumbers, a thoroughly practical man, was waited on by the School Board committee and asked to go over the work that we had condemned and to give a written opinion to the Board. This he did and while it was not quite so severe, it was enough to show that the system was not in accord with the rules of health or of sanitary plumbing. These buildings were after some time entirely remodeled according to our rules and regulations.

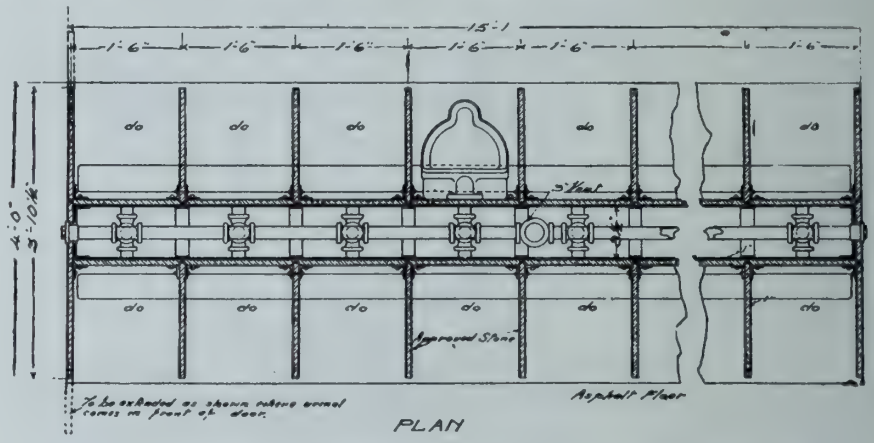
Range Closets Condemned.

From what I saw at that time of the working of range closets, it was enough to recommend that our ordinance condemn their use. This was concurred in by our city council. While making the above mentioned inspection we found the range closets in a very foul condition. On the line of the water, soil could be scraped off in a good many places. When they were first installed there was automatic tank attachment. The water company would not allow this and it was then arranged to work the tank with a pull to be operated by the janitor. You can imagine what would occur if the janitor happened to neglect his duty for any length of time.

The principle of the range closet is wrong from a sanitary standpoint and, in my opinion, their use should not be allowed.

The urinals in use in some of these buildings were constructed of glass with backs and ends held together with sheet metal frames with the ends up some distance from the floor. One tank holding about twelve gallons of water with a pull attachment supplied sixteen of these urinals with long gutter underneath and trap at the end. The surfaces of the urinals with their many fouling spaces and inadequate water supply we found very foul with a strong local smell.

The floor drains were the common bell trap set down on a tile sewer with cement joints. This work was all constructed before the passage of our State Plumbing Law or Plumbing Ordinance.



Some twelve years ago the School Board started to install individual syphon jet water closets of the seat action closed tank type with enameled iron bowl. They have given good service and are in working order yet. There is only one exception to their good service, and that is the bowl after a time becomes discolored and the enamel chips off. This makes them hard to keep clean. Through my recommendation they now install a heavy porcelain bowl instead of the iron enameled bowl with the same seat action and closed tank with much better results. The urinals now installed are solid porcelain individual with separate three-inch iron P trap and raised strainer. The trap is placed directly underneath the urinal and is large enough to be readily cleaned if necessary. With this connection the fouling space between the trap and urinal is reduced to a minimum. There is one tank for every group of three urinals.

The floor drains installed are provided with a trap and back water grate with water connection and compression stop cock to flush the drain and keep the grate clean and in motion so as not to become inoperative.

There is also a hose attachment and the fixtures so arranged that the janitor may turn on the water right in the room every evening and thoroughly cleanse both the fixtures and the room.

Toilet Rooms in Basement.

Many of the school buildings are arranged with the toilet rooms in the basement. At the back of the water closets and urinals there is an air space that is made tight and from this there is a sheet iron pipe of proper size run to a live flue.

With small ventilators taken out at each water closet compartment, this for a single system, under the conditions gives satisfactory results. Provision should be made to keep the flue heated at all times.

From my experience with this kind of work I would recommend where possible an annexed building indirectly connected to the schoolroom proper. We have several of these in connection with our school buildings and they give better satisfaction, for where the toilet rooms are in the building and there should be any local smell it is taken up through the building, making it unpleasant and not to the best interest of the health of the occupants.

From what I can learn by correspondence with many interested in this kind of work in the larger cities, I believe Peoria at present will compare favorably with any of them.

URINALS IN PUBLIC SCHOOLS.

The illustrations on pages 10 and 11 show details of urinals in Public Schools, designed by the sanitary department of

the New York City Board of Education as reported in the Engineering Review.

The location of all pipes are approximate, all measurements to be taken at the building.

Installation of Plumbing in School Buildings

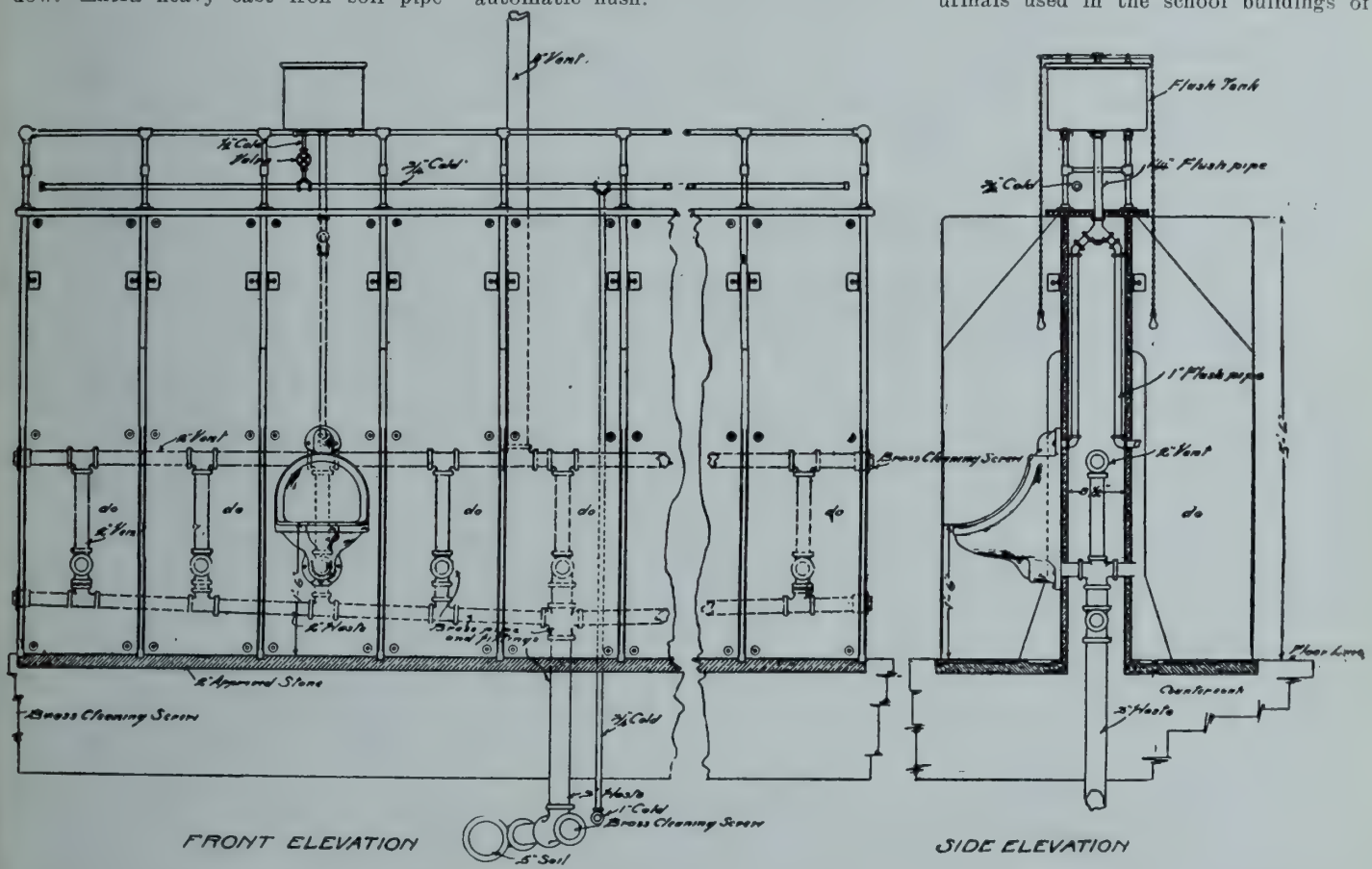
By William G. Williamson, Sanitary Engineer, Detroit, Mich.

The sewerage system of the building should be connected with the main or lateral sewer with the best of vitrified crock to a point five feet outside of the foundation wall. The main house trap and fresh air inlet should be installed at this point, or it may be installed in the basement bottom and the fresh air inlet carried outside of the wall to a point five feet from any door or window. Extra heavy cast iron soil pipe should be extended from the crock and enter the building to the point at which the several vertical stacks are to be connected. Proper clean-outs should be provided on all horizontal lines and at the foot of every stack and all vertical stacks should extend at full size through the roof to insure proper ventilation of the plumbing system. The rainwater and sub-soil drainage should be connected into the house sewer outside of the main house trap and be separately trapped.

Latrine Closets.

There are now many sanitary engineers and plumbing inspectors who believe the Latrine closet to be sanitary and suitable for use in school buildings. I disagree with them on this question for the following reasons:

First.—Trough closets, so named by reason of their shape, are often made use of in public buildings, particularly in school buildings. The trough is made of cast iron or glazed stone ware, is trapped at the outlet and has an automatic flush.



In comparison with a range of substantial siphon closets, with a seat action flush, they are, in my opinion, much inferior.

Second.—A considerable quantity of excreta is liable to accumulate in the trough, producing offensive odors. Not only is this true of the sides of the trough, but we must take into consideration the amount of excreta deposited in these ranges, between flushings, these flushings which occur at intervals of from ten to thirty minutes.

Third.—The sides of the trough may become fouled above the water standing therein, or the deposits may be too heavy, or too high above the water line, to be reached or removed by subsequent flushings.

Fourth,—The lack of the constant attention required by this style of closet causes the surface above the water line to become fouled, producing a rough surface, causing it to retain the excreta and become exceedingly foul smelling. This condition is more prevalent in cast iron closets, which are cheaply made and are coated with an inferior enamel.

In addition to these reasons, the amount of time, labor and water which these closets require for supervision and cleaning are, in the estimation of the writer, sufficient reason why they should not be installed in school buildings.

My personal observation of the urinals used in the school buildings of the city of Detroit leads me to the conclusion that the double glass back urinals set in the centre of the floor of of the toilet room have given us the best of satisfaction. And I wish to state that, in my opinion, this is the most suitable construction for this purpose. The larger number of our public school buildings not being over two stories in height, the toilet rooms may be placed in the basement, this affording ample room for the installation thereof.

Glass back, or slate back urinals, where placed against the walls of the building, are found to become foul on account of the settling of the walls and

the opening of the various joints therein, allowing the urine to pass through against the walls. This style of urinal has within the last few years been entirely removed from the public school buildings of the City of Detroit.

The Ventilation Problem.

The ventilation of the toilet room should be accomplished by means of a duct or flue, running direct from the toilet room through the roof of the building, and under no conditions should it be used to ventilate any other room or compartment of the school building.

In this duct or flue should be placed a small fan electrically driven, or otherwise, so that at all times the toilet room may be kept free of foul air. Under no condition where the steam blower system is used for heating and ventilating the school building should the toilet rooms of the building be heated from this source, but rather by direct radiation, and the air drawn from the other rooms of the building through the toilet room and discharged through the roof by the way of the duct or flue described.

Drinking Fountains.

The water supply for the public school buildings is generally well provided for because the public school systems of the cities throughout the country are supplied by the public water departments.

The supply for drinking purposes however is seldom given the consideration which it deserves, although this is a most vital matter as affecting the health of the thousands of children attending our public schools. Those in authority should see to it that as to both the purity of the water supply and the drinking fountains or other appliances from which it is taken, that they be pure, clean, sanitary and in all other respects above suspicion or reproach.

Manufacture of Enameled Cast Iron Ware

Production of the First Cast Iron Pattern From the Lead-Tub Pattern—Method of Molding and Filing the Pattern — The Third of a Series of Articles by Dillon Underhill, in The Foundry.

After the lead pattern has been finished we follow the tub pattern, in its regular course of manufacture, into the hand tub foundry

The lead pattern is shown on the form and follow-board in Fig. 3, the cheek and cope are in place and the sand in these sections of the mold has been rammed. In this view a 5-foot tub is shown in section and the wood bars are also located and properly spaced. For this class of work it has been found that the bars hold the sand best when not more than 7 inches face to face, and the bars can be placed close to the pattern, provided a sufficient space is left for a wall of sand between their edges and the pattern. It will be noted that the bars in the cope are closer to the pattern than in the cheek.

Since there are only two or three castings made from the lead pattern at the most, the sand can be rammed as shown in Fig. 3, and after the cope and cheek have been rolled over, the cheek and follow-board rammed, the sand can be cut away by the molder down to the parting necessary on the rim of the tub. In other words, the surface exposed will be dished all around the pattern. However, if desired, a beveled strip of wood may be set in entirely around the pattern so as to make the parting at the same time that the mold is being rammed.

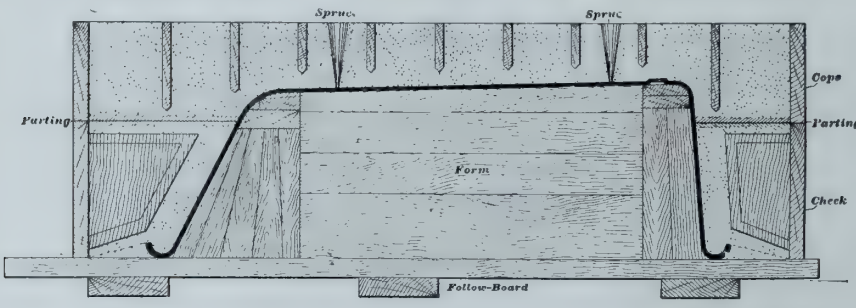


Fig. 3.—Lead Pattern on Form and Follow Board. The Next Operation is to Turn the Mold Over and Remove Wooden Form and Fill Interior With Sand.

Use of Regular Cast Iron Pattern.

Since the making of a regular hand-made tub is similar to this, many of the operations are also applicable when the regular cast iron pattern is used. When the cast iron pattern is rammed, only a follow-board is required, and the form is made of strips of wood tacked together to merely prevent the pattern from shifting. On the other hand, the form shown in Fig. 3 supports all parts of the lead pattern while it is being rammed. The parting line, when the cast iron pattern is used is made parallel with the follow-board by cutting down into the follow-board, or is built up so as to make the parting line parallel with the follow-board itself.

Finishing the Mold.

After the flask has been rammed the cope and cheek are lifted off and the pattern is removed by a crane, as it is too heavy to lift by hand and must be removed from the sand very carefully. In the hand tub foundry a jib crane works very well, and may be used to serve a number of molders, the tubs being arranged around the crane as a centre. A sectional view of the mold ready to pour is shown in Fig. 5. It has been touched up wherever the sand has been jarred loose, or where a rough surface has been left. The ideal mold is one that requires no further finishing after the pattern has been removed. It makes no difference how skillful a molder may be with his tools, the sand, when it is slicked will not have the same porosity as when it is rammed, and in consequence the surface of the castings will not be the same as on other sections where the sand has not been slicked, and the enamel will not produce as smooth a surface. A pouring basin is shown on top of the mold in Fig. 5. It consists of a box, open at the top and bottom, which is filled around the sides with sand. When poring the mold the object is to have just the right amount of metal in the two ladles to fill this basin quickly and

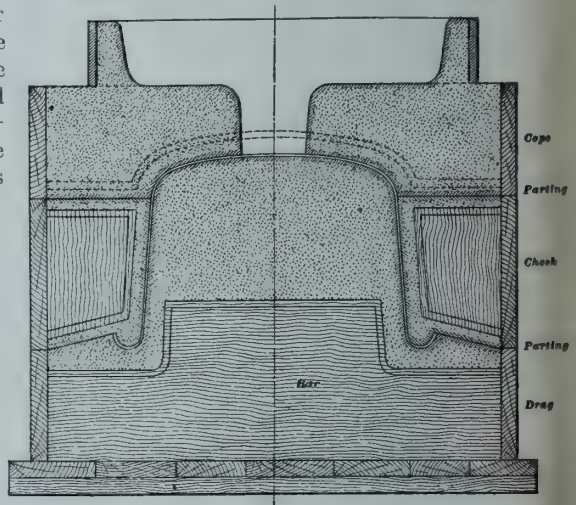


Fig. 5.—Sectional View of the Tub Mold Ready to Pour After Lead Pattern Has Been Removed.

thus permit the metal to run down and fill up the mold as well as the sprue. After the casting has been made from the lead pattern, it is taken to the sand-blasting room where the sand which adheres in a thick layer on all sides of the cast iron pattern is removed. It is also ground wherever any projections, such as fins or lumps, have formed as a result of the sand falling away. The sand-blasting and grinding will be treated in detail in a subsequent article.

Filing the Cast Iron Pattern.

If a working pattern is desired, the casting should likewise be symmetrical and straight, but it is not necessary that it be quite as accurate as for a master pattern, nor is as much stock needed as for the latter. Holes are then drilled in the pattern with a small breast drill, using a flat drill inasmuch as the workmen employed on this work are unskilled and they are liable to be careless and break the drill by shifting the same quickly while drilling. These holes are drilled far the purpose of gaging the correct thickness of the pattern, and to facilitate this work and to insure accuracy, a gage is used, the body of the tub being usually about ¼-inch thick. The gage shows amount of metal to be removed. This thickness gage is usually made by the workman from a small piece of iron with a ring in one end and a flat slot, the thickness of the pattern, is filed near the other end of the gage. If the pattern is too thin it can readily be measured by this gage and in most cases the casting must be made over, as a pattern less than the required thickness cannot be tolerated. Occasionally the foundryman is compelled to increase the pattern to the proper thickness at certain points, and to accomplish this a piece of sheet brass is inlaid in the casting and is filed up to the proper thickness.

Grinding the Cast Iron Pattern.

To reduce the cost of filing, the cast iron patterns are ground by an abrasive wheel driven by a flexible shaft. A number of grades and shapes of wheels must be used so as to secure their full efficiency and to prevent grinding the pattern down too quickly when approaching the required thickness. The amount of metal removed by the operator using a grinder on the flexible shaft is indicated on a gage witn the slot slightly longer and exceeding the required thickness of the pattern by 1-32 to 1-64 inch, this depending entirely upon the experience of the grinder. The operator must also use a small, straight edge so as not to grind in pockets. He must also be careful not to grind in one spot, as this is liable to spring the tub, as the friction will generate considerable heat and it is, therefore, necessary for him to swing the wheel constantly over a considerable area. If the motor is mounted on a pivoted platform so that it can swing easily, there is little danger of the flexible shaft breaking at the motor shaft joint, and the grinding can also be done more easily.

Hand Filing the Tub Pattern.

After the tub has been ground to the required thickness, the cast iron pattern is filed by hand to the finished thickness. This is a wearisome job as considerable metal is to be removed. The author has conducted a number of experiments to ascertain how much work a man should accomplish on these tubs, and after a day's work it was difficult to see where the metal had been removed. In order to find out how much metal is taken off from day to day, the patterns are weighed every morning. The amount of metal removed will vary from 2 to 4½ pounds for the first few days, whereas, on the last day, when the tub is being finished, only about ¾-pound of metal can be removed. In some cases the thickness of the tub is left entirely to the judgment of an experienced workman. A rim gage is used in all cases, both on the machine tub patterns, as well as on the ordinary hand molded tubs. It usually takes from a week to 10 days to file one of these patterns when two men are employed on the work. In order to level up the tubs around the rim, it is advisable to place them on a large surface plate mounted on legs. However, until the machine molded tub made the use of this large surface plate imperative, the usual method of lining up with straight edges and levels answered the purpose satisfactorily.

The patterns used for machine-molded tubs are among the most difficult to make in foundry practice. They are very large and only a slight variation is allowed in thickness. The usual casting is from 3-16 to ¼-inch thick, and if the pattern is 1-64-inch small and the flask pins are worn, it is not an unusual occurrence to have the casting come out of the sand ⅛-inch thick on one side and ⅜-inch on the other. When such conditions exist and the tubs are placed in the enameling oven, the difference in thickness does not permit the tub to expand uniformly and consequently it cracks. When we add to this the fact that the iron used is not always what it should be, we can readily appreciate the difficult position in which the maker of the machine-made-tubs is placed. The difficulties encountered in molding tubs by hand are not nearly so great as from the use of a molding machine, where practically three flasks are used, and it frequently occurs that an unusually large lot of defective tubs is found after a day's work, due to inaccuracies in the machine, as well as the patterns.

Vapor System in a Central Heating Plant

P. W. Rathbun, in the Metal Worker.

Before directly taking up the subject of vapor heating, it will be well to explain a convenient method of figuring radiation. The rule of 2, 20 and 200 is one advocated by John Mills many years ago. This rule has and is still giving the best of satisfaction. For steam heating divide the glass surface by 2, the exposed walls by 20 and cubic contents by 200, and add from 5 to 10 per cent. for coldest exposures. This will give you the quantity of radiation required to heat a building of good construction to 70 degrees in zero weather. For weather below zero add 1½ per cent. for each degree. Although in some of the Northern and Western States, where more severe weather prevails, it is necessary to add 2 per cent. for each degree below zero. A contractor must use his judgment and vary this rule according to the construction of the building. For hot water heating with an open tank system add from 60 to 70 per cent. to the amount derived for steam, the percentage to be varied according to the use of the room.

When we think of figuring on a central heating system our first thought is of steam heating, either by live or exhaust, but at the present time there are so many mechanical devices to cut down the cost of operation, and in some cases of installation, that it pays to think over the various systems and consider which would be best adapted to our customer's wants. These systems are, namely, the vapor system, vacuum system or air line vacuum system. The latter can be run either by a pump or seal of mercury. The former will here be described in detail.

A system of vapor heating is often recommended for all classes of buildings by leading heating and ventilating engineers and contractors, also the most advanced architects recommend it on account of its having proved satisfactory in operation and in general re-

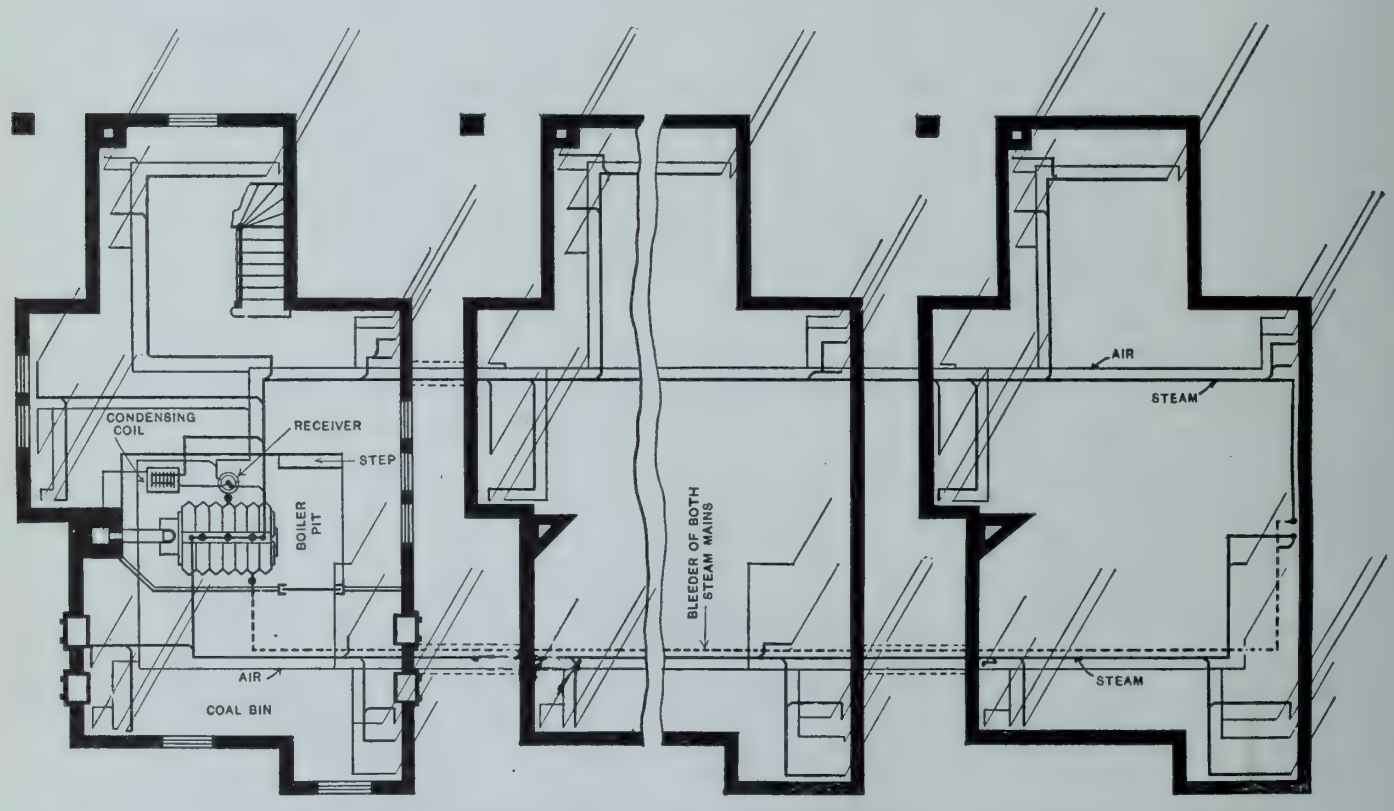
sults. A vapor system employs the ordinary hot water radiator and a regular steam boiler of sufficient capacity, a damper regulator sometimes known as the receiving tank or casting, a throttle valve to the radiator supply and an ordinary union elbow, a condensing radiator with connection to the smoke flue, together with mains of sufficient size and capacity graded to a proper alignment.

The accompanying plans show a vapor system which was designed by the writer and installed under his personal supervision some years ago. It is to-day and has been for the past years giving excellent satisfaction, proving a great economy to the owner and allowing his houses to rent for a much larger rate than otherwise. Before going further I wish to say that all flow connections to radiators are ¾ in., and that all return connections are ½ in. The flow mains are the same size as used in the ordinary gravity steam system, and the return mains are one size smaller than generally used.

radiation per building. Of course it is understood that the corner house has more exposures than the others, and, therefore, requires a larger quantity of radiation. This job was installed complete, including the furnishing of all material, for approximately 84 cents per square foot. It should be understood that the vapor heating requires 30 to 35 per cent. more radiation than steam and 30 to 35 per cent. less than hot water.

The following table may be very useful to contractors who are not positive as to the size and capacity of steam mains for a gravity low pressure system :

Direct radiation Sq. feet.	One-pipe work. Inches.	Two-pipe work. Inches	Dry return Inches	Wet return. Inches.
130	1½	1¼x1	1¼	1
260	2	1½x1¼	1½	1¼
420	2½	2 x1½	2	1½
665	3	2½x2	2½	1½
900	3½	3 x2½	2½	2
1,200	4	3½x3	2½	2
1,600	4½	4 x3½	3	2½



Plan of Piping Central Plant for Heating Six Houses by Vapor System.

The accompanying lay-out is intended to show that there are six residences of the same design located alongside of each other 3 ft. apart. The boiler is placed in the corner one, which is the owner's home. Here is where all mains start and terminate. This makes a central heating plant for the residences occupied by tenants and also the owner's home, approximately 335 sq. ft. of

FIRE-ESCAPE CONTEST.

Commercial Travelers' Day in connection with the National Exhibition, Toronto, will be celebrated this year on Saturday, Sept. 4th. The principal feature arranged by the Exhibition committee of the association, which met on Friday, July 2nd, was the fire-escape contest. This promises to be of especial interest, as it is something in which every knight-of-the-grip is particularly interested. A prize of $100 will be given jointly by the Commercial Travelers' Association and the License Department of the Ontario Government, for the fire escape which is considered the best for the private chamber in a hotel. The committee in charge, anticipate the exhibition of several designs—the contest being open to all members of the association. All entries must be sent into the secretary of the Toronto Association, Jas. Sargent, 51 Yonge Street, Toronto.

Travelers' Day will also include a five mile marathon race for prizes valued at $125, open to amateur members of the association, holding certificates for 1908 or 1909. A baseball game between the Toronto and Hamilton sections will be still another feature of the day. The winners will be holders for the year following of Ex-president M. C. Ellis' silver trophy, now resting under the wing of the Toronto association.

During the afternoon there will be a meeting which will be addressed by a number of the leading public men of the day.

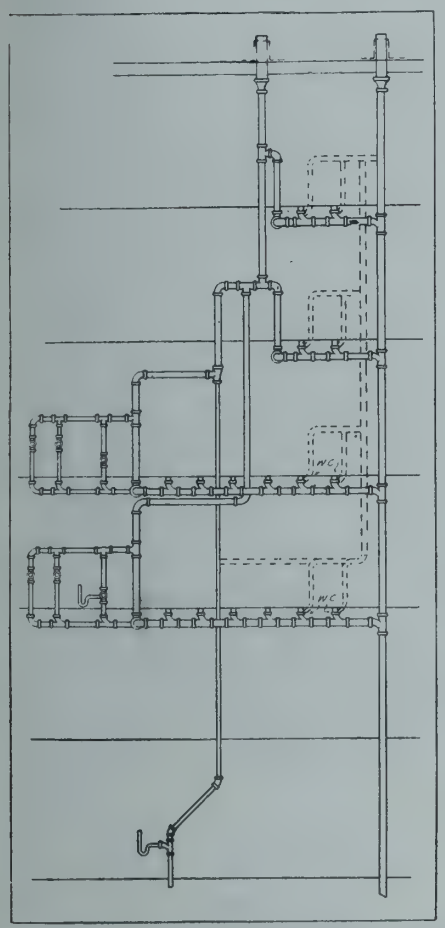
As the programme is a particularly good one the energies of those in charge will be directed to making the Commercial Travelers' Day of 1909 better than the best of the past.

Plumbing Systems for Schools and Hospitals

By Frank Dumond, Plumbing Inspector, Rochester, N. Y.

This subject is far-reaching—there are so many architectural and other conditions to be considered. After so much has been said along the lines of plumbing for buildings of this class I hardly feel equal to the task, but, however, will endeavor to create some little discussion by giving my idea on the subject.

I consider the best modern method of obtaining ventilation in a system of soil



Modern Yoke or Circuit Ventilation System.

and waste pipes to be installed in public buildings, where fixtures are placed in groups, is the yoke or circuit ventilation system, by means of which syphonage and back pressure on seals of traps are prevented by instaling two lines of pipe fixtures being placed between two such lines. Substantial floor connections should be made with threaded brass nibbles caulked into soil pipe fittings and provided with brass floor flanges.

My reason for preferring the yoke or circuit ventilation to back ventilation is that in the former system the lead bend, which so often gives out, is dispensed with and the whole system is provided with free ventilation unchoked, the full size of the soil and waste pipe. This, in my opinion, is much better than the 2-inch back vent connected to 4-inch lead bends, which has a tendency to hold the lead bend rigid and prevent in a measure the expansion and contraction, which constantly takes place, thereby causing the lead to become buckled on the bottom near the joint where it first gives out.

Again, in cases where the wastes from fixtures become stopped the solid matter is apt to back up in the vent pipe, which on account of its being small is also most certain to become stopped.

To illustrate in a general way my idea of the modern system of yoke and circuit ventilation, I will submit blue-prints made from a sketch of a plumbing system in a public building after it had been reconstructed. You will see by the dotted lines that the original work had two syphon jet water closets on each of the four floors, with a slop sink in the basement. The work was originally back-vented. When the job was reconstructed we had six water closets, two basins and one slop sink on the second and third floors, leaving the fourth and fifth floors, also the basement, as they were originally, with the exception of the changes in the ventilation of the four water closets on the two upper floors.

After the fixtures were installed the examining board of plumbers and the inspectors of plumbing of the City of Rochester, spent some time in making tests.

We inserted a testing plug firmly in soil pipe and vent pipes at roof, then, after the water in the small fixture traps had been measured, at a given signal we discharged all of the water closets on third, fourth and fifth floors, leaving all of the small fixtures and six water closets on second floor intact. A close watch was maintained to ascertain the result, and to our surprise none of the trap seals were broken in either the water closets or the fixtures.

When the next test was made plugs were left in at the roof, all of the small fixtures and the two water closets on the fifth floor were left intact. Then all of the water closets on the second, third and fourth floors were discharged, as before, with the same result as in the previous test.

We should have liked to have continued with the tests but were unable to do so because of the building being occupied.

Fixtures for such buildings should be of some non-absorbent material which will not become crazed or broken, having a perfectly smooth surface to which soil will not adhere, but from which it will be removed by the flush of water. All fixtures should be set open and perfectly free from enclosed woodwork or other covers, which would have a tendency to obstruct the light or prevent the circulation of air, and they should always be well supplied with water for flushing.

In public buildings the walls and floors of toilet rooms should be constructed of some non-absorbent material and should be provided with windows to the outer air.

TRANSFER PRACTICALLY COMPLETED.

While the final papers have not been signed and some minor details remain to be arranged, the transfer of the Standard Ideal plant at Port Hope to the Standard Sanitary Manufacturing Co., Pittsburg, has practically been completed, and before another issue of The Plumber and Steamfitter is published final announcement ought to be made.

Theodore Ahrens, president of the Standard Sanitary Co., spent several days in Toronto, last week, and held conferences with H. T. Bush, of the Standard Ideal Co. He returned to Pittsburg on July 10, but is expected to return about July 20, and complete the arrangements for the transfer.

PLUMBERS' PICNIC AT LONDON.

July 24 is to be a gala day for London master plumbers, Noble & Rich, one of the liveliest firms in Ontario, having issued invitations to their sister firms in London and to the salesmen for the supply houses to join them in a picnic at Springbank, London's picnic resort.

Sports for both master plumbers and their ladies will be on the programme, the main feature being a game of base ball between the Noble & Rich team and a nine selected from the travelers.

J. R. Wright, of Noble & Rich, is secretary of the committee in charge.

Why not hold similar picnics at Toronto and Hamilton, and why not have the bosses of Galt, Guelph, Berlin, Waterloo and Stratford get together at Berlin or some central point?

A few gatherings such as these would soon pave the way for a provincial association. What about it, master plumbers and supply men?

Letters from Correspondents on Trade Problems

The Editor Invites Short Letters and Sketches Describing Problems Met With or Original Methods of Doing Plumbing or Heating Work—Name of Writer Required, Though Not Necessarily for Publication.

LETTER FROM NATIONAL SECRETARY.

Editor Plumber and Steamfitter,—It was with great satisfaction that I read your article on keeping up the price. If all master plumbers would only follow that idea, there would be less failures and a much better class of work done. There are three ways of righting this wrong.

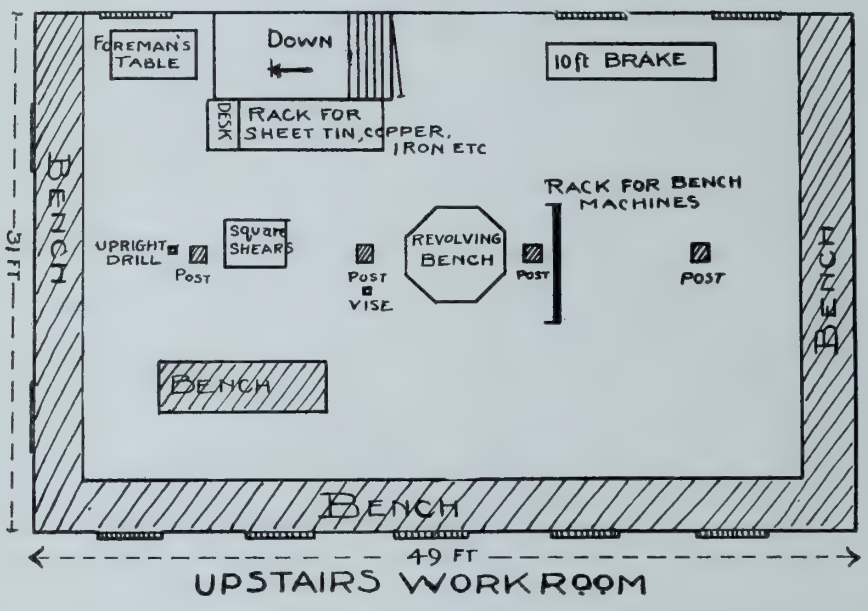
1. Let all architects insist that the specifications be carried out to the letter and nothing be changed without a separate price is given. That will give all plumbers figuring on that job a square show. Saves the architect trouble, ensures the owner a good job, and stops this cutting as the only way it can be done in architects' offices is by stuffing the specification.

2. Have nothing to do with cheap, general contractors, as they not only peddle the job from one shop to another, but lie like thunder about the prices they received from other plumbers, although they would like to give you the job. After you figure with no profit and get the job the contractors fail. They get the hog and all you have is the squeal.

3. Form yourselves into an association, meet together and discuss your jobs. Don't be afraid to let the public know you belong to a Master Plumbers' Association. It is no disgrace to belong to an organization that is a benefit to the public and to you. Cut out this petty jealousy and help one and all.

Keep the good work up, Plumber and Steamfitter, as the paper is a credit to Canada. You should be assisted in your good work by both the master plumbers and wholesale people. Hoping to see your paper represented at our convention in September.

H. W. MUNDAY,
Secretary N. A. M. P. of Canada.
Montreal, July 12.

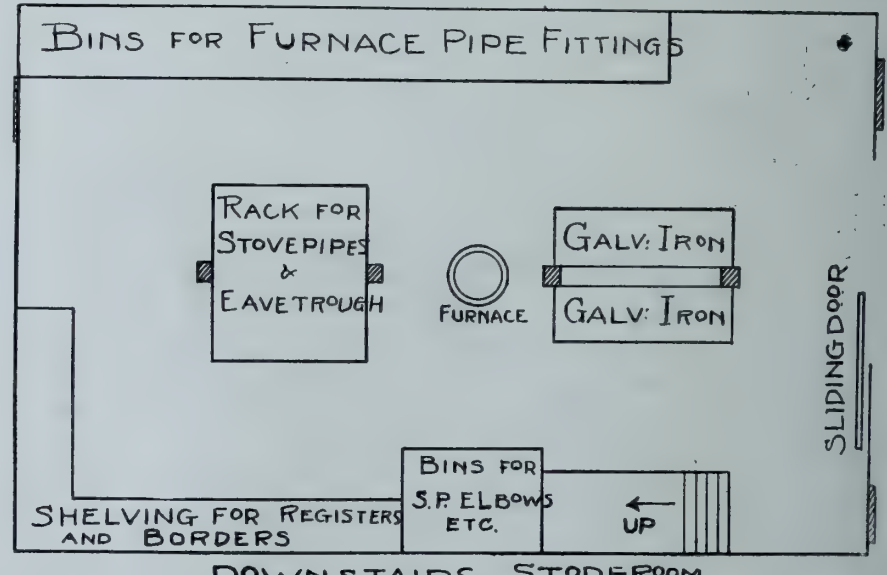


UPSTAIRS WORKROOM

WORKSHOP ARRANGEMENT.

The Somerville Hardware Co., Edmonton, have what is claimed to be one of the best arranged plumbing and tinshops in Western Canada, two sketches being shown herewith.

In the downstairs section stock is carried, bins and shelving being placed along the wall and racks on the centre of the floor. Upstairs there is a bench around three walls of the shop, the bench being ironed with ⅜ x 3 inch bar iron, all stakes having iron socket holes. There is also an octagonal revolving bench in the centre of the shop for machines for crimping, grooving, seaming, etc., the bench allowing the workmen to remain in one position while using different machines. Another bench at one end may be extended the length of the room by planks and supports. This bench room is useful when making up rolls of iron roofing, stores of these goods being kept. Underneath the benches on the walls is an open space for storage purposes, scraps going into boxes. Lockers are placed on the wall between each window for workmen's tools. Furnace stock, etc., is carried in a separate warehouse. Other features of the shop arrangement are shown in the illustrations.



DOWNSTAIRS STOREROOM

A recent patent that should be of particular interest to electricians and plumbers covers a machine for boring holes through overhead beams, which does not require the operator to climb a ladder, but may be operated and directed from the floor. The machine is mounted on a staff provided with a foot which rests on the floor, and this staff may be adjusted to bring the boring tool against the ceiling or beam. The tool is operated by means of a hand crank, and the feed is regulated by a chain, both within easy reach of the operator. The device is arranged to bore a double line of holes.

F. E. Law, Robert Clark, Walter Stewart, Amon Wilson and John Hamilton, St. John, N.B., have applied for incorporation as the People's Stove and Plumbing Co., to carry on the business at present conducted by F. E. Law.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Ben Noble, of Noble & Rich, London, spent a few days in Toronto this week.

The city council have passed an amended by-law regulating plumbing in the city.

W. S. Howe, Canadian Fairbanks Company, Montreal, is away on a vacation trip to Boston.

Hamilton & Stott, St. Thomas, have secured the contract for extending the civic heating system for the sum of $2,668.

E. J. Young, secretary Calgary Master Plumbers' Association, is advertising for journeymen plumbers for several firms in that city.

The Pease Foundry Co., Toronto, per Phillips & Co., Orillia, was awarded the contract for heating the South Ward school at Orillia.

J. R. Myers, Stratford, has secured the contract for heating the new addition to the Collegiate Institute at that place, the price being $258.

E. B. Arnold, formerly of the firm of Wilson, Son & Arnold, architects, Chatham, Ont., has joined the staff of the Dominion Radiator Co., Toronto.

Fred Armstrong, Toronto, has been awarded the contract for the plumbing work in the new Boys' Home on George street, the figure being $456. The Pease Heating Company get the heating contract at $835.

Eugene Charbonneau, a plumber living at Montreal, is suffering from internal injuries, cut head and legs and arms badly bruised, sustained by falling from the second storey to the basement of a new house in Maisoneuve, a suburb of that city.

W. J. Wall, Montreal, representing the J. L. Mott Iron Works, New York, and the Crane Company, Chicago, spent a few days in Toronto last week. J. F. Dewar, in charge of Mr. Wall's Toronto office, is unwell and will spend a couple of months holidaying in Muskoka.

The Orillia Hardware Co. has been awarded the contracts for heating the West Ward and Central schools at that place. The first contract is worth $2,303 and the second, $1,248. The firm also received the contract for the plumbing, galvanized iron work, roofing and eavetroughing on the Central school. This contract is worth $896.

The H. R. Ives Co., founders and former manufacturers of the Bizon hot water boiler, has gone into voluntary liquidation, and J. C. McCormick has been appointed provisional liquidator. The H. R. Ives Co. was one of the oldest firms of its kind in Canada, and some fifteen years ago was considered one of the leading firms in the country.

The capital of the new asbestos merger, the Black Lake Consolidated Asbestos Company, with offices at Montreal, will be $1,000,000, 6 per cent. bonds; $1,000,000, 7 per cent. non-cumulative preferred stock, and $3,000,000 common stock. The company will take over the Union Asbestos mines, the Southwark mines, a controlling interest in the Imperial Asbestos Company, and the Black Lake, Chrome and Asbestos Company—in all an acreage of 5,385.

A. DesMarchais, with Illsey Bros., Red Deer, Alberta, and recently with Carter Bros., Picton, Ont., has secured the contract for the heating apparatus in the extensive greenhouses of Terrill & Co., Calgary. This company has four of the biggest greenhouses in Western Canada, and Mr. DesMarchais had to compete against the leading plumbers and steamfitters of the province, and came out ahead. It will take two car loads of pipe and fittings to do the work and two fifty horse power boilers to do the heating.

A plumbing specialty traveler representing a New York house got more than he bargained for at Lewiston, N.Y., a week or so ago. He had finished a good trip in Ontario selling goods for the Good Company he represents and was returning home to his Buffalo headquarters via Niagara boat and when arriving at Lewiston, he was over-anxious to get ashore. He found, however, that he wasn't as good a jumper as he thought he was and as a result got more water than he usually indulges in, having to be fished out of Niagara river by the deckhands.

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At a recent meeting of the Halifax Board of Health, Arthur T. Meagher was appointed plumbing inspector, to succeed the late D. P. O'Neil. Mr. Meagher has been in Edmonton, Alta., for some time, and his examination was conducted by C. W. Hart, formerly of Halifax, and the papers sealed and forwarded to the Board of Examiners at St. John, accompanied by a certificate from Mr. Hart, to the effect that an examination was carried out according to the rules. The examiners reported to the Board of Health that the highest percentage at the examination was 91, made by Mr. Meagher, who they nominated for the position.

The Waldron Company, recently organized at Winnipeg, as heating engineers, have issued announcements of the opening of their display rooms and office 92 Princess street, where a line of hot water and steam heaters, ventilators, steel ranges and stoves are in stock. The company are exclusive western representatives of the International Heater Company, Utica; the American Heater Foundry Co., Detroit; the Spencer Heater Co., Scranton; the Garden City Fan Co., Chicago, and the Guelph Stove Company. The new company, which is under the management of C. D. Waldon, will maintain a heating and ventilating engineering department for the purpose of assisting the trade in securing the best possible systems. They will solicit business through the trade only, and they are making an effort to maintain the high standard of the heating and ventilating trade of Western Canada.

LAUNDRY REGULATIONS AT WINNIPEG.

Many Canadian cities are asking for copies of the regulations governing the sanitation of laundries recently adopted by the Winnipeg Board of Health. Licenses can only be secured by complying with the following regulations:

Plumbing and Drainage.

There shall be a proper and sufficient number of waterclosets, sinks and lavatories as required by Sections 110 and 111 of By-Law No. 4274, and the same shall be installed in a manner satisfactory to the Health Officer and shall be adequately lighted and ventilated. The sanitary conveniences shall be under cover and so partitioned off as to ensure privacy, and if for the use of females, shall have proper doors and fastenings.

They shall be so arranged and maintained as to be conveniently accessible to all persons employed therein at all times during their employment. Where persons of both sexes are employed the conveniences for each shall be so placed or so screened that the interior shall not be visible (even when the door of the convenience is open) from any place where persons of the other sex have to work or pass; and if the conveniences for one sex adjoins those for the other sex, the approaches shall be separate. All laundry tubs shall be properly trapped, vented, and sewer connected.

Ventilation.

The premises throughout shall be maintained at all times in a thorough state of repair, in a scrupulously clean condition and free from vermin. Every laundry shall be efficiently lighted and shall be so ventilated as to render harmless all gases and dust. The workrooms shall be at least nine feet in height and be supplied with windows in sufficient number and size to ensure of plenteous supply of light and air. The windows must open into the open air and must be arranged so that they can be opened for ventilation.

Wooden Tubs Prohibited.

The use of wooden and metal lined tubs is prohibited. All laundry tubs and wash troughs shall be made of porcelain, earthenware, enamelled iron or other impervious substance approved by the Health Officer. All tubs, utensils, machinery, and all vehicles used for the transportation of laundry work shall at all times be kept in a perfectly clean and satisfactory condition.

The walls of the workrooms shall not be papered but must be painted, varnished, or of smooth surface so as to be easily cleaned. The floors of all wash rooms shall be rendered impervious to water. The walls of wash rooms must be rendered impervious to a height of six inches above the floor, except at doorways, so that said floors can be flushed or washed out without leaking. If wash tubs are against the walls, the walls behind same shall be rendered impervious to a height of 18 inches above the top of the wash tubs.

Prevention of Disease.

If the building is not used for laundry purposes exclusively, the rooms used for cooking and sleeping shall be entirely separate from the work rooms. No person shall at any time occupy or permit others to occupy any workroom for a sleeping or living room. The moistening of clothes by spraying water from the mouth is strictly prohibited. No person suffering from, or who has recently suffered from or been in contact with any case of infectious or communicable disease shall be permitted to work in any laundry. The proprietor manager or person in charge of any laundry shall give immediate notice to the Health Officer of any case of infectious or communicable disease occuring on the premises. No proprietor, manager or employee of any laundry shall knowingly receive from, or remove any clothing from any premises where there exists or has recently existed a case of infectious or communicable disease.

All licenses will be issued conditionally on the foregoing regulations being strictly observed throughout the period for which the license is granted. Constant supervision will be maintained by the Officers of the Department and licensees will be required to obey and carry out any instructions given by them relative to the sanitary condition of the premises. Under Section 7 of By-Law No. 4274 these regulations become a part of the said by-law, and any person violating the said regulations may be prosecuted for such violation.

Clauses From Plumbing By-law.

The clauses in By-law 4274, above referred to, read as follows :

"110. **Water Closets and Sinks.** In all sewer-connected, occupied buildings, there shall be at least one sink and one water-closet of approved pattern, and construction, and there shall be at least one additional water-closet for every twenty persons or fraction thereof beyond the first twenty persons occupying or using any such building, so that there shall not be more than twenty persons occupying or using such building for each water-closet so to be approved."

"**Additional Closets.** Provided that in all tenements and lodging-houses where there are more than twenty persons on any floor there shall be on such floor at least one additional water-closet for every twenty persons or fraction thereof beyond the first twenty persons occupying or using such floor, so that there shall not be more than twenty persons occupying or using such floor for each water-closet so to be provided, and there shall be such additional sinks, urinals, and lavatories, as in the opinion of the Health Officer may be necessary."

"111. Accommodation to be provided in all classes of inhabited buildings. Every person who shall be the owner, agent, lessee, keeper, manager, or occupant of any tenement, house, boarding-house, lodging-house, restaurant, workshop, manufactory, store, office or building, must provide or cause to be provided therein for the accommodation and use of the tenants, lodgers, boarders or workers therein, adequate cellars, sinks, privies and water-closets, and same shall be adequately ventilated and constructed and shall at all times be kept in such cleanly and wholesome condition as not to be offensive, dangerous, or detrimental to health, and no offensive smell of gases from or through any outlet or sewer, or through any such privy or water-closet shall be allowed by any person to exist or remain in such tenement, house, office, workshop, factory, store or building or any part thereof, or any out-house or grounds thereto. Said privies or water-closets shall be provided so that there shall not be more than twenty persons inhabiting, occupying, or employed in such tenement, house, shop, factory, store, restaurant or building for each privy and water-closet so to be provided.

"157. **Drain-Pipes from Refrigerator or Ice-Box.** No drain-pipe from a refrigerator or icebox shall be connected with the soil or waste-pipe, but it shall discharge into a properly trapped, sewer-connected, water-supplied sink. No over-flow pipe from a tank shall discharge into any soil pipe or waste or water-closet trap or into any drain or sewer, but it may discharge upon a roof or into an open water-supplied sink."

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertaknngs.

Work has begun on the New Liskeard water system.

Baddeck, N.S., is to establish a waterworks system.

New Liskeard is considering the extension of its sewerage system.

Extensions are to be made to the sewer system at North Vancouver.

Regina is asking for tenders for sewer pipe and waterworks supplies.

North Toronto citizens are discussing the establishment of a new sewage system.

Morristown, Ont., is to vote on a by-law to spend $15,000 for a waterworks system.

Sewerage extensions totalling about

$70,000 are planned at Fairview, a suburb of Vancouver.

Toronto is to ask for tenders for 31,000 feet of 12-inch water pipe for extensions in recently annexed districts.

North Toronto Ratepayers will vote on July 17 on a by-law to raise $140,000 for the instalation of a seweage system.

Vernon, B.C. ratepayers have passed by-laws to issue $75,000, 5 per cent., 25 years, waterworks and $30,000, 20 years, school debentures.

An engineer will reoort on the three plans and estimates submitted for new steel tower and tank for the waterworks at Shelburne, Ont.

Building Notes.

A $20,000 dwelling is being erected by T. Godman, Vancouver.

C. D. Tapprell, Calgary, is having a $5,000 residence built in Mount Royal.

Tenders are being called for on an eight room school for Saskatoon East.

A permit has been issued to Ellis & Geogan, Calgary, for a new $13,000 warehouse.

The Toronto Separate School Board has decided to open a new school on St. Clair avenue.

Tenders are being called for the erection of a new Presbyterian church at Peterboro.

A new Presbyterian church is being built at Zelma, Sask. The building is a frame one 24 x 36.

The Peterboro city council has let the contract for the new Carnegie library to Rutherford Bros., at $21.887.

A new church, to be known as the Alhambra avenue Presbyterian church will be erected in Toronto.

The contract for the erection of the new Union Bank, at Saskatoon, has been let to F. H. Webb for $28,500.

A new business block will be constructed by Anderson, Williams & Garland, Portage la Prairie, Man.

Dunn avenue Presbyterian congregation, Toronto, will erect a new schoolroom and recreation rooms.

St. Mark's Presbyterian congregation, Toronto, will build a new church at Queen street and Bellwoods avenue.

S. A. Potticary, plumber, St. Thomas, signed his largest contract last week, he having entered the realm of matrimony.

Wychwood Presbyterian congregation, Toronto, will raise a loan of $20,000 on their property for the erection of a new church.

Chester Presbyterian congregation, Toronto, will sell their present property and purchase a new site at Broadview and Dearborn avenues.

Peterboro's building permits for the month of June totalled over $45,000, more than fifty per cent. in advance of those of last year for the same month.

The tender for the alterations and additions at Park Baptist Church, Brantford, of P. H. Secord & Sons, contractors, has been accepted, at $12,000.

Jacquet river village, N.B., is experiencing a building boom. At the present time a large number of houses and other buildings are being erected, one being a branch of the Royal Bank.

The contract has been let to Wilson & Hurst, Calgary, for two $5,000 residences to be built on American Hill, one for Mr. Hutton, of the Northern Bank, and the other for E. Hart Nichols, solicitor.

The contract for the improvements at Colborne Street Methodist Church, Brantford, has been let to Eli Riddolls at $11,000. Besides this, the heating system will be re-arranged. Taylor & Taylor are the architects.

An important building contract to be let shortly at Vancouver, will be for the addition of four storeys to the three-storey block, owned by Stephen Jones, of Victoria, and which is located at the corner of Hastings and Homer Streets. The improvements will cost between $40,000 and $50,000.

The builders of St. Thomas (which include the plumbing trade) have for the last five years, furnished entertainment for Dominion Day. Last week's effort was the best yet, and a big day of sports was furnished. Bert Hamilton, of Hamilton & Stott; W. Rose and A. Lewis, of Ingram & Davey, were on the energetic committee. Other places will find that it will pay them to have the builders take the matter up.

A building permit for the tuberculosis hospital, at Ottawa, was taken out on June 25. The estimated cost of this building is placed at $30,000, the construction being solid brick, three storeys high. Two solid brick schools are also to be erected by the Separate School Board, costing $12,632 and $13,393.

A fine building to be erected at Saskatoon this year, is the Baldwin block. The building will contain 24 suites of rooms and 18 sets of rooms, suitable for bachelor's quarters. Each suite of rooms has a bathroom and other conveniences in connection. The basement contains sample rooms, with laundry and heating plant. The cost of the building is $40,000. The plans were prepared by W. W. La Chance.

At a recent meeting of the board of governors of the University of Saskatchewan, Saskatoon, it was decided to erect the following buildings this year: A building for general purposes to cost about $200,000; a residence for boys to cost from $80,000 to $100,000; a powerhouse with heating and lighting plant costing about $35,000. The architect chosen to prepare plans for the university and building connected therewith is D. R. Brown, of Montreal.

The building permits issued in Calgary for the month of May amounted to $370,650, which amount is over $2,000 more than even Edmonton despite their new government buildings. The figures for the same month last year were $77,350, the increase in percentage being 379.18. Building at Calgary during the month of June amounted to $202,710, which is a large increase over the corresponding month last year, record of which shows a total of $147,700.

Tenders have been let by the Governors of the Western Hospital, Toronto, for a new pavilion that will form the southern wing of the new building, and will cost $10,000. The contracts that have now been awarded include corridors connecting the new pavilion with the present main bulding, and from that to the two pavilions at the rear. A general boiler house will be erected at the south end from which not only the present buildings but all future ones will be heated.

Building permits issued at Saskatoon for June amount to $105,060. On the list is the McRae apartment block, $12,000; the McClary Manufacturing Co.'s warehouse, $2,000; McKay block, $7,500; Bowerman block, $30,000; and residences for the following, R. E. L. Clark, $2,000; W. Jeffery, $2,000; A. Ilsen, $4,000; G. W. Hamilton, $3,000; H. Chubb, $2,500; J. W. Jermyn, $2,000; A. E. York, $2,000; Mrs. Gunn, $2,300; A. H. Hanson, $4,500; H. Elford, $2,300; J. McConnell, $2,200; M. C. Hamilton, $2,500; J. C. Bryce, $2,500. The remainder is made up of smaller residences and cottages. The amount of permits issued for the first half of the year is $432 145.

Building operations at Prince Albert, Sask., are fairly active and becoming more so as the season advances. Some buildings under way are the Agnew block on Selkirk avenue, the Goodfellow block on River street, the Masonic temple and the collegiate institute. The permit has been taken out for a $4,000 addition to the Prince Albert Hotel. Tenders are being called for on a new steam laundry, and other buildings spoken of include a new office building for the Imperial Bank. A block is also spoken of to be erected adjoining the Queen's Hotel and another near the Agnew block. A. A. Anderson is building a frame house and Robert Clunie is putting up a residence on River street.

General Building Notes.

A Grenier, Quebec, Que., will build a $4,000 house.

J. T. Davis Montreal, will erect a large modern residence.

W. Moffat, Portage la Prairie, Man., will build two residences.

A. Griffiths will put up a modern business block at Welland.

W. A. Noble, Hamilton, will build a brick house, to cost $2,500.

A Bowerman will erect a large office and business block at Saskatoon.

Tenders are being called for the large new C.N.R. hotel at Port Arthur.

R. A. Burris is contemplating the erection of a brick block at Port Arthur.

Building permits in Stratford were $25,000 in May and $20,344 in June.

The Dominion Trust Company is to erect an office building at Victoria, B.C.

Geo. Harris has the contract for erecting the Union Bank building at Virden, Man.

Mrs. J. T. Warrington, Toronto, is to erect an apartment building to cost $38,000.

Peter McSweeney Co., Moncton, N.B., are preparing to build a large addition to their store.

The Union Bank has purchased a site on Jasper Avenue, Edmonton, for a modern office building.

Excavating has started for a fine business block which will be built for Neil McMillan, Moose Jaw.

Sydney, C.B., is enjoying a building boom. Forty new houses, worth $60,000, are being erected.

Permits for $25,675 worth of new buildings were issued at Guelph for the first three weeks of June.

A new guild hall will be erected by Holy Trinity church, Welland. Plans are being prepared by T. L. Nichols.

Building permits at Fort William for June, were $307,000, and for the first six months of 1909, $1,979,445.

Buildings to the value of $150,000 were begun at Moncton since January 1, nearly all being private dwellings.

Finley & Spence, Montreal, have drawn plans for a $175,000 apartment house, to be erected at Westmount, this year.

Ex-Ald. J. Rogers will erect a ten-storey building at Vancouver. Construction will probably be commenced next spring.

The Canada Life Association is having plans prepared for a seven-storey fireproof office building to be erected at Vancouver.

The Vancouver, B.C., Y.W.C.A. have inaugurated a campaign to raise $35,000 for the building and equipment of a new wing

It is expected that tenders will shortly be called for the erection of the new Horse Show building, estimated to cost $8.500. at New Westminster.

M. M. Webb, contractor, has purchased a large tract of land at Hamilton, and intends erecting 68 working-men's houses.

Building permits at Vancouver totalled $650,000 in June, and $3,500,000 for the first six months of 1909. June's increase was 100 per cent.

The contract for building the new G. T. R. station at Ottawa has been awarded to Peter Lyall & Sons, Montreal. The station will cost $500,000.

The Winnipeg City Methodist Mission Board have obtained a permit for the erection of a two-storey brick kindergarten building. Estimated cost $11,000.

Building permits issued at Sydney, N. S., in May showed an increase of 455 per cent. over the same month last year. Brandon, Man., showed 564 per cent. increase, and Berlin 190, London 79 and Peterboro 54 per cent.

The contract for the construction of a handsome new apartment house at the corner of Georgia and Bute Streets, by James D. Bryce has been awarded by Henry B. Watson, architect, to Dissette & Dean. The cost is $75,000.

Recent Winnipeg building permits include:—J. E. Wilson, two houses, $2,800 each; H. A. Wilson, house, $2,500; H. Holdeison, house, $3,000, Cochrane & McGarvin, house, $2,000; T. R. Billet, house, $9,000, and T. E. Ames, four stores, $11,000.

Recent building permits in Toronto include:—R. B. Storey, pair dwellings, $10,000; J. F. Eby, four pair dwellings, $20,000; F. Courtmarche, two pair dwellings, $10,000; A. D. Petrie, pair dwellings, $5,000; H. G. Horton, pair stores, $6,000; C. R. S. Dinnick, house, $5,000.

The following building permits were recently issued at Ottawa: Mrs. Isabella Lumsden, dwelling, $4,000; J. J. Fague, dwelling, $500; John Fixter, dwelling, $3,500; George Learoy, dwelling, $900; Oscar Beaudry, dwelling, $5,500; Chas. Farley, dwelling, $500; W. H. Craig, dwelling, $2,700; F. W. Lalonde, dwelling, $1,800, Omer C. Lyon, dwelling, $3,000; Frank Wilson, dwelling, $1,700; Napoleon Lafontaine, dwelling, $1,200.

There is no slackening in the building activity in Toronto, and the returns for the month of June indicate an increase of nearly 100 per cent., when compared with the corresponding month last year. Following are the statistics from Jannary 1 to June 30. Approximate value of buildings January 1 to June 30, in 1908, $5,013,245, in 1909 $829 375; approximate value of buildings for the month of June, 1908, $1,055,405; 1909 $2,011,545.

Public Buildings

The Winnipeg Christian Scientists will build a new church.

Tenders are wanted for a new town hall, at Strathcona.

A new separate school building will be erected in Clarkstown, Ont.

Plans for the new $15,000 school at Watrous, Sask., are now ready.

A site for a new fire hall has been bought at Swift Current, Sask.

A $12,000 addition will be made to the House of Industry, Toronto.

A new Catholic church will be erected at St. Gabriel de Brandon, Quebec.

The Estevan, Sask., School Board has accepted plans for an 8-roomed school.

Plans have been completed for a new Methodist church, at Rocanville, Sask.

The Orpheum Theatre Circuit propose to build in Winnipeg a new opera house.

A 12-room brick school is to be put up at Raymond, Alta., to cost $20,000.

D. P. Bate, Saskatoon, is getting plans for a $90,000 collegiate institute.

Killarney, Man. is asking for tenders for the erection of a new $10,000 town hall.

A new building is to be erected for the Kootenay Lake general hospital at Nelson.

The Ruthenians will build a $9,000 church in the Norwood district, Edmonton.

A Presbyterian college will be built at Moose Jaw. A site has already been selected.

The Moose Jaw Board of Trade want the early construction of a land titles building.

The plans for the new divisional schools at Revelstoke call for a $40,000 building.

Dauphin, Man., ratepayers have voted to expend $60,000 for a new school building.

A by-law has been passed by Dresden, Ont., ratepayers to issue $20,000 school debentures.

Tenders for the erection of the Regina, Sask. hospital building will close on July 19.

Tenders were recently called for the new Anglican church at Moose Jaw, to cost $35,000.

Tenders were recently taken for four room addition and assembly hall to the Dauphin south school.

Tenders were recently taken by J. Turner, Winnipeg, for a two storey addition to Brooklands School.

Plans for the new $100,000 provincial asylum at Selkirk, Man., are ready and tenders will be called shortly.

Stratford ratepayers will vote on a by-law to raise $15,000 for the enlargement of the general hospital..

The G.T.R. will shortly commence the construction of a station at South Indian, 22 miles east of Ottawa.

J. C. Cahoon and S. S. Newton secured the contract to build the new $40,000 school at Raymond, Alta.

Cahoon & Newton have been awarded the contract to erect the Taylor Academy at Cardston, Alta. Cost $41,000.

Belleville will vote on a by-law to raise $70,000 for the purchase of three school sites and the erection of school buildings.

The by-law to provide $70,000 for the erection of three new public schools at Belleville was defeated on July 5 by 375 votes.

The contract for the construction of a new court house at Fernie, B.C., has been awarded to J. A. Broley at about $70,000.

Port Arthur council has appropriated $40,000 additional for a new collegiate school. The sum of $60,000 had already been granted.

The Orillia Public School Board has prepared plans for alterations and improvements to various schools amounting to about $16,000.

PLUMBING AND HEATING MARKETS

MONTREAL.

July 12.—Plumbing supply houses are uniformly busy. :Orders are not only coming in freely, but show a steady increase in bulk. In fact general satisfection seems to be expressed with the way things are shaping, and there is a confident tone to the trade that was absent some time back.

Plumbers, judging from the orders, are now generally busy. There is plenty of building going on locally and in the country, and the prospects are favorable for a much bigger development later on. Users, therefore, are justified in stocking up more freely, and there is no doubt a growing tendency on the part of many plumbers to work up a good stock of material so as to be prepared for a heavy fall.

The markets are firm, with no important changes announced locally. Soil pipe continues to be a leading line with lead and iron pipe good seconds. The advance in radiators and boilers seems to have steadied the market, and good orders are reported at the new discount, of 50 and 10. Supplies for the time being are in good shape and rush orders are met with promptly.

SOIL PIPE—The demand still shows up strongly for soil pipe, and supply houses report excellent business. Orders are coming in from all parts of the country, and shipping departments are busy getting consignments away, as most of the orders are marked "rush." There are no changes in prices, and we quote: Light, 3 to 6 in., 60 off; medium to heavy, 2 to 6 in., 70 off; 8 in., heavy, 40 off.

LEAD PIPE—A strong active demand exists for lead pipe. Supplies are in good shape, however and orders are easily met. There are no changes in prices, and we quote: Pipe and waste at 27½ off; traps and bends at 50; calking lead at 5c per pound.

SOLDER—Heavier lots of solder have been sold within the last few days, and it is evident that many users are commencing to gather some stock together. Roofers are now busy and altogether solder is moving well. We continue to quote 19½c for half and half, and 18½ for wiping.

IRON PIPE—Iron pipe is selling very freely especially for outside points. Although there has been some shading going on, the following discounts are being generally observed, ¾-in. to 4-in., black, 72½ off; galvanized, 62½ off.

RADIATORS AND BOILERS—The recent increase in discounts seems to have steadied the market. A good tone prevails, and orders are coming in with marked freedom. Everything looks healthy, and the maintenance of tone to the markets will keep things in good shape. We quote: 50 and 10 off. Steamfittings are still at the old discount of 70.

BRASS GOODS—There is a better tone to brass goods. A firmer market seems to have stimulated buying. We continue to quote: Compression work, high grade 60 and 10 off; standard, 70; fuller 75 off.

METALS—The metal market has not been so strong, and shading has been noticed in tin and copper. We quote: Ingot copper, 14½c; ingot tin, 32½c; lead, $3.55; pig iron, Middlesboro No. 3, $16.50 to $16.75; Summerlee, $18.75. Heavy scrap red brass is 10c; light copper 10c; heavy lead, 2¾c.

TORONTO.

July 14.—Both heating and supply houses report a brisk demand for supplies, the season for roughing in being well advanced with a demand for finishing goods developing. New houses, etc., in course of erecting are being equipped with boilers radiators and bath and kitchen enamelware, the call from Toronto being far greater than from outside places.

With work in the condition it is at present there are few idle and good prices ought to be secured for contract work. The contrary is the case, however particularly on the smaller house jobs, one supply man expressing the opinion that prices are being cut even closer than they were a year ago—if that is possible.

Country house plumbing is a growing feature in the trade and some Toronto plumbers are devoting attention to this class of work in residential suburbs and resorts near the city. The same applies to other places throughout the country, hot air engines and pumping outfits being called for in increasing numbers. The farmers are learning the lesson of sanitation from the city men with the country residences, and farm house equipment will be a feature of the trade from now on, hot water heating taking the place of hot air in many cases.

Prices of both heating and plumbing supplies are being held firm and unchanged. Soil pipe and fittings, with iron pipe, both black and galvanized, in brisk demand.

ENAMELWARE—An increasing demand is felt, particularly in Toronto, where building work is well advanced. A call for better grade goods is noted although master plumbers by their price cutting methods are doing little to make quality a more important consideration than low prices. No changes in quotations are reported.

BRASS GOODS—A good trade is being done, the call for finishing goods including brass work. Prices are steady with an advance predicted in the fall. The copper market, however, is none too strong.

LEAD PIPE—Supplies are plentiful but the demand is lively for pipe, traps and bends. We quote: Lead pipe and waste, 27½ p.c; traps and bends, 50 p.c., and calking lead, 4½ cents per lb.

SOLDER—Larger purchases are being made and the trade is evidently stocking up in preparation for a busy season. We quote: Wiping, 18½ cents, and half and half, 19 cents.

IRON PIPE AND FITTINGS—Prices of iron pipe in the States have been put back to their old figure, the peculiar feature of the situation being that skelp was kept steady during the interval that pipe was cut. The advance in the States ought to steady the local market althought prices are still weak at $4.54 for 1-inch black and $6.19 for 1-inch galvanized. Malleable fittings are unchanged at 40 p.c. and cast iron fittings at 70 per cent.

SOIL PIPE—Orders are being received in very satisfactory quantities by jobbers and makers many shipments being marked "rush." We quote: medium and extra heavy, 70; over 6 inch, 40, and light pipe, 60, with fittings, 70 off.

BOILERS AND RADIATORS—The market is steady at the advanced prices quoted in June. Hot water boilers are now 50 and 10, and steam boilers 60 and 10. Wall radiators are 50 and 10; hat water, 50 and 10; and steam 50, 10 and 2½. Angles and curves are 25 p.c., and other specials proportionately.

STATE PLUMBING EXAMINERS.

A bill now before the Massachusetts State Legislature provides for a plumbing examining board of three members, one to be a practical plumber, one a sanitary expert and the third to have such qualifications as shall be prescribed by the state board of health. The first is to receive a salary of $2,000 per year and the others such sums as the state board of health shall determine, provided they receive $5 per day for each day of actual service but not more than $350 in any one year. The bill further provides that examination of plumbers are to be made twice a year in Boston and five other cities or towns of the state. Every plumber must be licensed and those working without licenses will be liable to a fine of $50.

VALUES OF DIFFERENT SIZES OF COAL.

The following observations on the values of different fuels have been taken from the "Fitter's Companion," recently issued by the J. L. Mott Iron Works, New York, as of timely interest.

Hard coal, stove or egg size, is the standard on which the Mott boiler capacities are based. If other fuels are used, careful calculation is necessary to get the same result. For small heaters stove or nut is best; for the larger sizes egg size may be used. Soft coal requires a larger grate surface for the reason that it cakes together and the air for combustion cannot get through it so easily. It also requires more boiler surface for the reason that the soot of soft coal is harder to get off than the dust from hard coal, and soot prevents to some extent the passage of the heat to the water.

Experiments on power boilers have shown that 50 per cent. more power can be developed with the same boiler when using anthracite egg coal as against anthracite pea coa. This does not mean that furnace coal is more economical, but that with pea coal, to get the same results, a boiler one-half larger is necessary, unless the draft is exceptionally strong. This is due to the fact that the pea and similar sizes of coal burn slower and yield their heat less readily than the larger sizes of hard coal. If the conditions are properly considered, however, there is no reason why 1 ton of pea coal should not give up as much heat as the larger sizes. A larger expense in boiler power is all that is necessary to allow pea coal to be used.

Be careful to examine the chimney of the building in which you propose to install the heater. If it is not as large as the catalogue calls for, as necessary for the boiler needed, do not take chances—it will not pay. It is well to remember that what is a good draft for a stove or a furnace may be a very poor draft for a heater which may have to do the work of 20 stoves or 6 furnaces.

Every pound of coal requires about 300 cu. ft. of air to burn it. It therefore, requires 10 times as much air to properly burn 100 lb. of coal as it does to burn 10, and so on. Don't try to do what is impossible; a boy boy may sometimes be made to do a man's work but a small chimney cannot possibly do the work of a large one.

In the burning of fuel two-thirds of the value goes to gases, and the proper combustion and utilization of these gases determine the value of a heater. Coal gas will not burn unless it is kept at a temperature of 800 degrees or over. A bright surface fire is necessary to consume these gases, or a deep bed of fire must be kept so the gases will be consumed as they pass up through the burning fuel. A bright surface fire can only be had by maintaining a shallow fire and feeding it often, hence great waste results because a house heating boiler cannot be attended to oftener than twice or three times a day. A deep firepot admits of burning the gases by slow combustion, and the heater will carry fire in the coldest winter weather for 12 hr. and in ordinary weather for 24 hr.

ADVANTAGES OF STORING WATER

Consul-General Robert J. Wynne, of London, transmits the following synopsis of a report made by Dr. A. C. Houston, director of water examinations, to the Metropolitan Water Board, of the British metropolis, on the advantages of storing water for some time previous to its filtration:

Storage reduces the number of bacteria of all sorts, and, if sufficiently prolonged, devitalizes the microbes of water-borne disease (typhoid bacillus and cholera vibrio). An adequately stored water is to be regarded as "safe."

The use of stored water enables a constant check to be maintained on the safety of London's water antecedent to and irrespective of filtration. It renders any accidental breakdown in the filtering arrangements much less serious.

The habitual use of stored water would lighten the grave responsibilities of the water board as regards the safety of the London water supply, and would tend to create a sense of security among those who watch over the health of the metropolis.

Raw river water should be stored antecedent to filtration preferably for 30 days. The question of whether the 30 days' storage should be fixed on a maximum or a minimum basis must be left unanswered; but if the former alternative be chosen, the desirability of employing supplementary processes of water purification to tide over emergencies is worthy of consideration.

GAS IN THE WATER PIPE.

Edward Jacobs, a New York plumber, recently made a novel discovery, which will interest the trade. Mr. Jacobs was called to one of the downtown buildings in which the owner detected the presence of gas in his drinking water. Following the dictates of his experienced mind, Mr. Jacobs dismissed the idea that gas could enter the supply pipe in the street through any leak, as the pressure would surely repel any foreign matter entering the pipe. As a last resort, after thoroughly cleaning the reserve tank on the roof and a good deal of experimenting at other points, he decided to open the street, not having the least idea what he would find. There was a leak with the water streaming from it, and a strong odor of gas in the neighborhood, indicating a leak in the gas main. The pressure of the water, of course, kept the gas from entering at that point, and how it got in was still a mystery to him, until the engineer of the building unconsciously solved the problem when he started the pump in operation, thereby cutting off Mr. Jacobs' little fountain in the excavation and replacing it with a strong suction. Of course, everything was then clear; the suction when the pump was in operation was greater than the water pressure at the leak and drew in the gas. Mr. Jacobs claims no credit, saying it was merely an accidental discovery. But the incident may prove of value to some and guide them when called upon to solve similar problems.

CHANGE IN THE ILLINOIS LAW.

The Illinois Legislature, which has just adjourned, made some slight changes in the act "To Provide for the Licensing of Plumbers and to Supervise and Inspect Plumbing," which went into force July 1, 1897. The principal change in the act is an amendment which provides that the fee for a certificate for a master plumber or employing plumber shall be $50, for a journeyman plumber it shall be $1. The new amendment provides that the certificate shall have force for one year from date of issue and may be renewed upon its expiration by a payment in advance of an annual renewal fee of $10 for master certificates and $1 for a journeyman certificate.

DROPPED FORGED WRENCHES.

J. H. Williams & Co., 150 Hamilton ave., Brooklyn, N.Y., manufacturers of drop forgings, have issued a fine 120 page catalogue, a striking feature of which is the front cover design of a red-hot fac-simile of a drop forged wrench. On page 7 of the book mention is made of the new lines made by the company, these, including, amongst others the "Vulcan" bijaw chain pipe wrenches and the "Agrippa" fittings chain wrenches. A numerical index on page 8 is also very convenient and a special talk on steel specifications is given on pages 107 to 110. In addition to the large addition of these catalogues, a separate edition of pocket size will be printed for distribution among employes of workshops, etc. Mention this paper when sending for one of the books.

TO PREVENT SCALE.

To prevent scale in boilers a Russian engineer recommends the following: Put linseed in the upper part of a copper tank divided by a horizontal sieve of fine mesh and connect it with the hot water supply. The resultant decoction filters through the close meshed double copper sieve to the lower part and is fed to the boiler through the injector. The slimy substance of the solution attacks every particle of the forming scale which does not adhere to the walls of the boilers and is readily ejected as the boiler is blown out. The necessary amount of linseed is stated to be about ½ lb. for every horse power. Taking 30 lb. of steam as corresponding to 1 h.p., the quantity of linseed required would be about ½ lb. for every 270 gal. of feed water.

STEEL CLOSET TANKS.

A new line which seems to be making headway on the United States market is the line of enameled steel closet tanks made by the Pittsburg Sanitary Manuturing Company, Pittsburg, Pa. These tanks are made of a very heavy gauge special quality enameling steel. They are of one piece of steel and have no seams or joints to cause them to leak. They are coated inside and out with white porcelain enamel, particularly adapted for sheet steel and impervious to any water. The advantages claimed over wooden tanks are that the steel tanks have no linings to wear out and no wood to split, warp or absorb moisture. The steel tanks are also said to be lighter and stronger than any other material, the light weight making it very easy to instal. Special printed matter will be sent to any plumber who mentions this paper.

BATHS FOR MINERS.

Bath houses for Scottish miners, for use at the end of their shift, are to be provided by the Fife Coal Company. This is the first movement made in the British Isles for such purposes, although the miners on the Continent have for many years made general use of the bathing accommodations provided for them.

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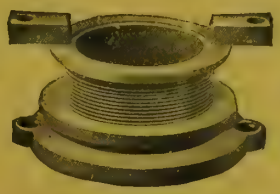

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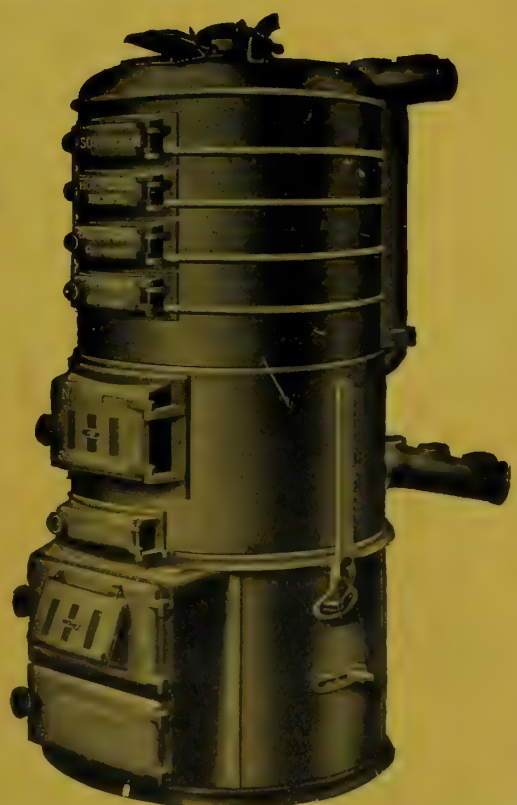

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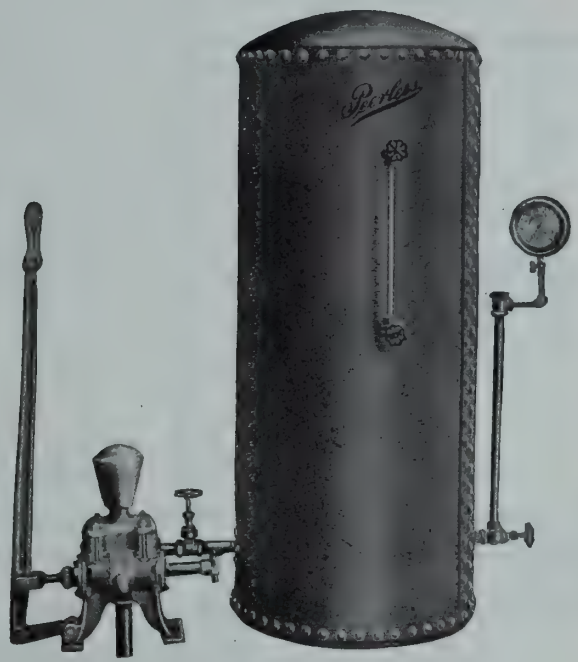

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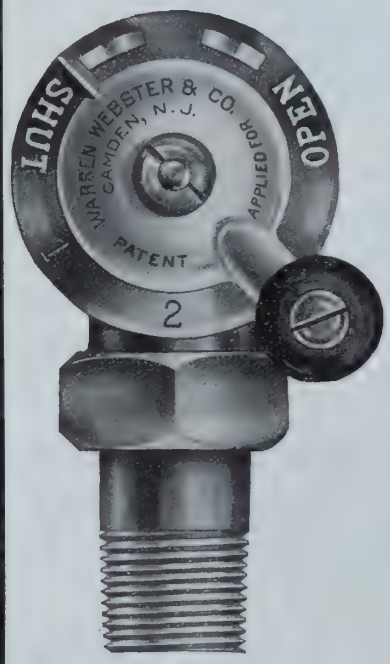

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TORONTO, AUGUST 2, 1909

A CITY BEHIND THE TIMES.

A master plumbers' association is needed at London, Ont., about as bad as anywhere in Canada—the need being felt by the public generally as well as by the trade itself.

London is a city of about 50,000 people, but, as pointed out in The Plumber and Steamfitter of May 20, 1908, has no plumbing regulations in force and no inspection is made of work done by master plumbers. In other words anyone can do plumbing work in London in any way he pleases.

How does this work out? A reputable master plumber at London, interviewed by The Plumber and Steamfitter last week, stated that plumbing work was being done in London in a way degrading to the trade and dangerous to the health of the community. He admitted that in his daily practice he was doing jobs in a way which would not have been permitted by the employer under whom he served his apprenticeship.

A man wants a plumbing job done. Not knowing much about the relation of good sanitation to health, he wants it cheap and peddles the job from one plumbing shop to another. Acting independently and without any organization to uphold the standards of the trade, the master plumbers do as the customer asks and quote a low price. If they took pride in their work they would refuse to do a cheap job and would explain the danger of such work to the customer. Competition and lack of organization, however, encourages one to bid against the other and do work at a low price by scamping the work, doing away with necessary vents, etc. The customer gets a cheap job but it may cost him a heavy doctor's bill or his child's life in a year or so.

London enjoys an unenviable position in being one of very few cities of its size in America which has no plumbing regulations or inspection. Hamilton is in very much the same position, but a dozen or more smaller cities in Canada have inspection of plumbing work.

London seems to be controlled by large property owners who fear to spend money on their property and thus ensure healthful conditions. Sooner or later London will be compelled to do as Winnipeg has done—abolish the open privy vault and put modern plumbing in every house. Winnipeg learned its lesson as a result of an epidemic of disease. London has an opportunity to learn by the experience of Winnipeg and other cities.

If plumbing regulations and inspection are unnecessary in London, why are they necessary in practically every city of 10,000 or over in Canada and the United States?

London's mayor and London's newspapers have a duty to perform in awakening the people to the necessity of good sanitation as well as pure water. Good water is necessary but good sanitation is equally important.

London's master plumbers should organize an association if for no other purpose than to establish plumbing inspection and improve the standard of plumbing work being done in that city. Every master plumber who has the interests of the trade at heart will favor the appointment of a competent inspector. Why not, therefore, take the lead in bringing about such a needed improvement.

WHAT PLUMBING MEANS TO MUNICIPAL HEALTH.

Inasmuch as sanitation is the keynote of public health, so scientific plumbing it the keystone to perfect sanitation. Modern methods of perfect sanitation would not be possible without the aid of the plumber and the application of his science.

That perfect sanitary conditions are absolutely essential to the preservation and prolongation of the public health is accepted by the veriest lay mind; that plumbing plays so important a part in the scheme of sanitation may not appear so patent. That it does so is, of course, fully realized by every plumber. Where scientific plumbing is lacking, or not understood, infectious disease is very prevalent, and the death rate correspondingly very high.

Modern Sanitation recently pointed out that we need not go so far back as the great plague of London, which carried off hundreds of thousands of people, for an example of how the municipal health would suffer through disregard of sanitary methods and imperfect plumbing. Take as an instance the outbreak and ravages of bubonic plague during the last few years in British India. Millions of natives and numbers of Europeans have died through this horrible scourge. and still continue to die from it. This complaint is, of course, a filth disease, and is mainly due to unsanitary conditions and a total disregard to sanitary plumbing. The Indian government, in fighting native opposition and religious fanaticism, is endeavoring, with a view to the elimination of the disease, to place the towns and districts populated by the natives on a sanitary basis. Until this is done, and the natives induced to conform to modern sanitary requirements, nothing will stamp out this plague.

What the science of plumbing really means to the municipal health, the health of the people, can be summed up in a few words. It means the prevention of a possible outbreak of plague, smallpox, typhus or other highly infectious disease, an epidemic of which would devastate a city like a withering fire. It means also increased comfort and greater cleanliness in the home and, consequently, better health to the inmates.

LIVE UP TO THE PLUMBING REGULATIONS.

The journeyman plumber sometimes prides homself on dodging the regulations, because in doing so he fools the inspector. The regulations in regard to the weight of pipe, methods of making joints, repairing leaky and cracked pipes and many other things relating to practical details of work were all made by practical men, by experienced plumbers, who were first-calss, says The Master Plumber. The rules were formed so as to insure first-class work, and, as they were making the rules for themselves, they did not make them in such a way as to increase the cost of workmanship.

In olden times when plumbing rules were new, the journeyman said to himself that there was no reason for putting three-quarter pound of lead, per inch diameter, into the hub of an extra heavy pipe; so with some old newspapers in the bottom and oakum on top of that, he filled up the hub until a thin ring of lead filled the hub approximately flush. This took rather more time than putting in the ordinary quantity of oakum. The thin ring of lead required very careful calking and sometimes had to be taken out and poured a second time. But in the end he effected a saving of one, two or three pounds of lead, according to the size of the joint.

On one occasion where work of this kind had been done, it was brought to the attention of the boss plumber, who happened to be of the type known as a "skin." He had no love for inspectors or rules, but he remarked in regard to the work: "Didn't the fool know that while he was saving 12 cents worth of lead he wasted 25 cents worth of time?" There are a great many such economies in plumbing. Savings can be made in the expenditures of material, but they cost more than they are worth. With a thin ring of lead, unless unusual care has been taken with the oakum, the lead will sink in places, being driven down before it expands so as to fill the joints. Where a line is subject to a water test a few such points will cost perhaps twice as much in time as if it had been made in the regulation way.

Cracked lengths, cracked hubs, blowholes that cannot be plugged, and other similar defects are often put in place with the hope of getting them passed by the inspector. If they are found the usual song is "We didn't see them," or "We hadn't noticed them." Such an answer would pass muster if the blow-holes were not always carefully turned so as to bring them out of sight. It is far better for the master plumber frankly to condemn such a pipe and refuse to put it into the job than it is to run the risk or having to take the defective pieces out.

CONSERVATORIES AS SWIMMING BATHS.

The unique use to which an Englishman has put his erstwhile flower-filled conservatory, as told by Modern Sanitation, is well worth considering by Canadian plumbers, especially as it seems there is more than a probable likelihood that such a use may be largely copied, if the idea is suggested to men of means who have unused conservatories attached to their residences.

The English house-owner having wearied of his collection of flowers and ferns, conceived the idea of every man having his own swimming pool upon the premieses, and called in a practical plumber to see what could be done. The floor was excavated to a depth of four feet at one end, sloping to twelve at the other. The lesser depth permitted of the bathing of those who could not swim, while the greater depth enabled all kinds of fancy diving to be safely indulged in with perfect safety. The excavated cavity was lined with stone as a foundation for cement and adorned with brickwork and green-glazed tiles. The existing hot-water pipes were found to be ample for heating the bath, and the owner found himself in possession of a water-tight and attractive bath-house. It was now necessary to arrange some kind of dressing-rooms, since these were clearly needed. By utilizing the potting-shed, which had formerly been a dingy annex of the conservatory, five convenient dressing-rooms were formed. The bath is used for swimming, diving and polo, and is a never-failing source of amusement to the owner and his friends during the entire year.

There is no limitation to a swimming bath of this kind. It would be but a step further to add a steam room for the sweat bath, rooms or compartments for a shower and massage, in fact every requisite for a Turkish bath.

One thing not to be overlooked is a means to insure privacy from the public gaze when the location is near a street or highway. A hedge fence surrounding the bath will give the desired privacy, and add a picturesque finish.

While this species of diversion cannot be employed in any but large houses, there is no reason why those who can afford it should not add this improvement to their residences.

GAS STOVES A GOOD SIDELINE.

A great many plumbers have good locations and beautiful stores, for the purpose of storing their goods, and for an office, for which they pay a large rent, and maintain a clerk, or clerks, to carry on their work. Next door, so to speak, will be found a full line of gas appliances. The neighboring stores will handle gas ranges and get the piping; the plumber will not get any of it, for the reason that he does not invite the public to come into his place. If his doors were wide open, his store looked progressive, and in it he had a line of gas appliances, it would bring into his store customers who would give him their piping, and perhaps would tell him to fix a sink, instal a new closet, or many other little things, which, in the long run, would pay as well for all the trouble experienced in the handling of gas appliances.

A perfectly installed sanitary system in the house is of more importance than even the foundations of the building. An architectural defect in the foundations of a structure may result in the collapse of the building and injury, or death, to a comparatively few people. A defective installation in a house, however, may be the cause of a far more calamitous disaster. A defective connection or a leaky pipe may be responsible for the inception of some infectious disease, and a resultant epidemic which might decimate a whole community.

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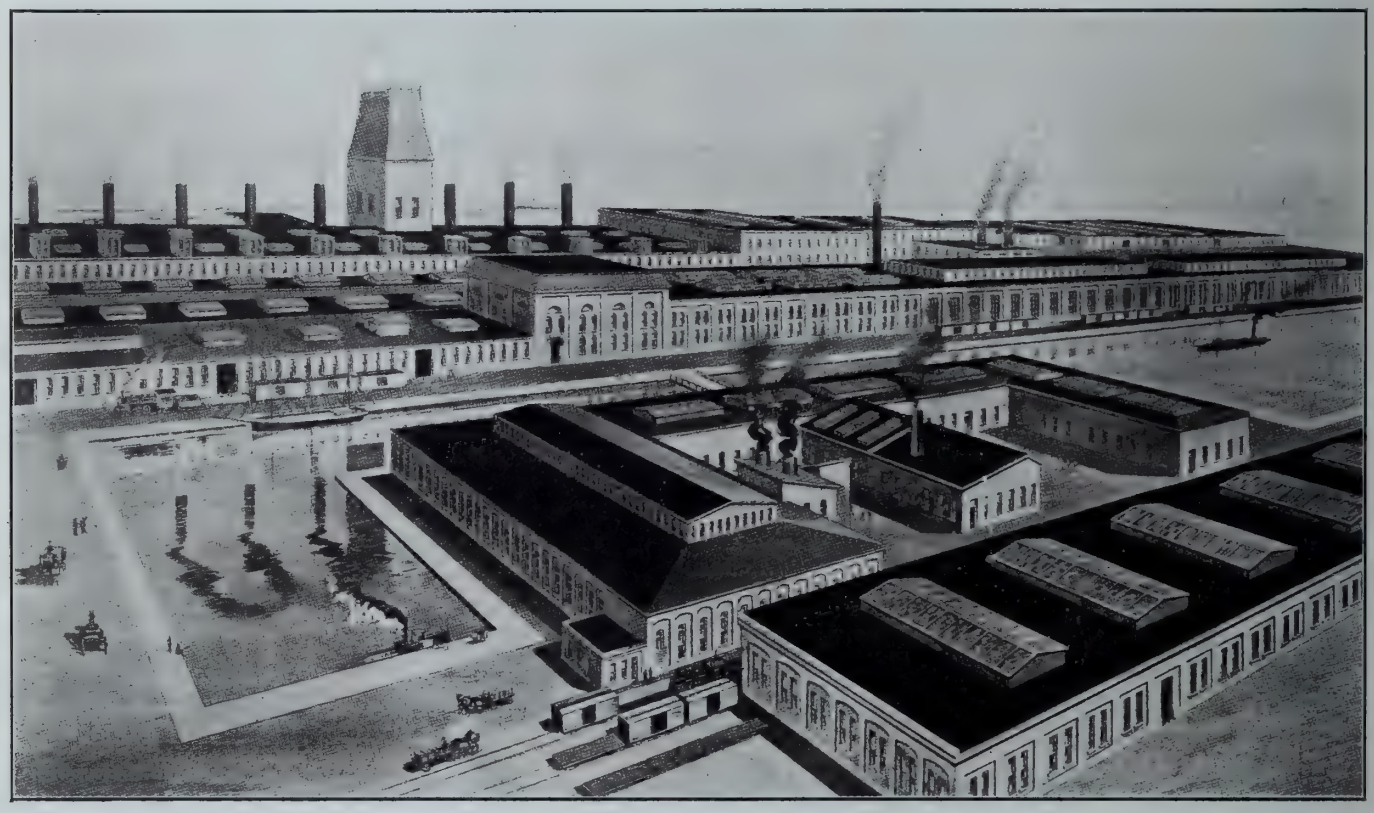
Canadians Retain Control of Standard Ideal Plant

Announcement of Sale of Plant to Pittsburg Capitalists Premature—Old Management Enlists Co-operation of Wealthy Montrealers and Buys out Foreign Shareholders—Company to be Re-organized with Capitalization of $2,000,000.

Following the decision given by Justice Archibald at Montreal last May in the suit of the Standard Sanitary Manufacturing Company, Pittsburg, against the Standard Ideal Company, Port Hope, came the announcement that the Pittsburg company would erect an enamelware plant in Canada. The project had been mooted before and a jobbing business had been purchased, two smaller supply businesses being merged into the larger concern. Rumors were next circulated of the taking over of other businesses by the big American concern with to over half a million dollars annually, beginning in 1903 with an investment of $90,000 and having assets in 1909 of $569,000, did not control the company, the majority of the stock being held by Cleveland men. Negotiations were entered into between men at Cleveland and Pittsburg with the result that against Mr. Bush's protest representatives of the Standard Sanitary Manufacturing Company visited Port Hope and inspected the plant preliminary to making an offer to buy.



The Standard Ideal Co.'s Plant at Port Hope Over Which There Has Been an Interesting Struggle For Ownership Between Canadian And American Capitalists.

$7,000,000 or $8,000,000 capital and finally it was suggested that instead of building a Canadian plant the Pittsburg capitalists would purchase the Standard Ideal plant at Port Hope and by eliminating a strong competitor secure practical control of the market.

A Fight for Ownership.

The foregoing is but preliminary to a story of genuine interest as H. T. Bush, although he had founded the Standard Ideal Company and built up the business to a turnover amounting

Theodore Ahrens, president; F. J. Torrance, vice-president; W. A. Myler and E. L. Dawes, of the Standard Sanitary Manufacturing Company, visited Toronto on several occasions while H. T. Bush and A. D. McArthur, of the Standard Ideal Company made various trips to Montreal, Pittsburg and Cleveland in order to interest Canadian capitalists and secure backing to retain control and prevent the industry from being included in the merger if at all possible.

Some Cleveland shareholders were anxious to dispose of their holdings to the Standard Sanitary Company and Messrs. Bush and McArthur had to be quick in securing the backing of Canadians able to invest several hundred thousand dollars. The remarkable success of the Standard Ideal Co. in its six years of existence, however, made this possible and after refusing an offer to sell his interests and become a director in the American company Mr. Bush met the Cleveland shareholders and secured their acceptance of an offer to buy out every share available at a premium on the face value of the stock. This entailed the payment of over $300,000 to complete the transfer, but the money was promptly forthcoming and the deal closed; practically every share in the Standard Ideal Company being now held in Canada.

Aim To Control Canadian Market.

Mr. Bush is naturally very elated over the outcome and in an interview with The Plumber and Steamfitter stated that the Standard Ideal Company would be re-organized with a capitalization of

$2,000,000, this making the company probably the strongest of its kind in the world, when the size of the market is considered. Part of this money will be spent in improvements on the plant, no effort being spared to make it thoroughly modern and capable of turning out the finest quality of enamelware. The name of the company may also be changed.

Mr. Bush showed great faith in the future development of the Canadian market when he established the plant six years ago and again in fighting to secure ownership for Canadians rather than having it become a branch of an American company and the Montreal men who have associated themselves with the industry include some of the strongest financial men in Canada, they having put up sufficient capital to ensure the ability of the re-organized company to maintain the Canadian market free from outside influences.

With the Standard Ideal Company so greatly strengthened and with improvements to be made in the equipment it is doubtful if any American company will for some time at least invest the several hundred thousand dollars necessary to spend in order to equip an enamelware plant, especially as the two existing Canadian plants have been greatly enlarged recently and are well capable of supplying the needs of the Canadian market.

Plumbing Systems in Public Institutions

Frank Dumond, Inspector of Plumbing, Rochester, Endorses the Circuit or Loop System of Venting Plumbing Systems in an Address at Omaha recently.

This subject is far-reaching. There are many architectural and other conditions to be considered. And after so much has been said along the lines of plumbing for buildings of this class, I hardly feel equal to the task, but I will endeavor to create some little discussion by giving my ideas on the subject.

I consider the best modern method of obtaining ventilation in a system of soil and waste pipes to be installed in public buildings, where fixtures are placed in groups, is the yoke or circuit ventilation system, by means of which siphonage and back pressure on seals of traps are prevented by installing two lines of pipe, the fixtures being placed between two such lines. Substantial floor connections should be made with threaded brass nipples caulked into soil pipe fittings and provided with brass floor flanges.

My reason for preferring the yoke or circuit ventilation to back ventilation is that in the former system the lead bend which so often gives out, is dispensed with, and the whole system is provided with free ventilation unchoked, the full size of the soil and waste pipes. This, in my opinion, is much better than the 2 in. back vent connected to 4 in. lead bends, which has a tendency to hold the lead bend rigid and prevent in a measure the expansion and contraction, which constantly takes place, thereby causing the lead bend to become buckled on the bottom near the joint where it first gives out.

Again, in cases where the wastes from fixtures become stopped the solid matter is apt to back up in the vent pipe, which, on account of its being small, is also nearly certain to become stopped.

To illustrate in a general way my idea of the modern system of yoke or circuit ventilation I will submit a sketch of a plumbing system in a public building after it has been reconstructed. You will see by the dotted lines that the original work had two siphon jet water closets on each of the four floors with a slop sink in the basement. The work was originally back vented; when the job was reconstructed we had six water closets, two basins and one slop sink on the second and third floors, leaving the fourth and fifth floors, also the basement as they were originally, with the exception of the changes in the ventilation of the four water closets on the two upper floors.

After the fixtures were installed the Examining Board of Plumbers and the Inspectors of Plumbing of Rochester spent some time in making tests, with these results.

First, we inserted a testing plug firmly in the soil pipe and vent pipes at the roof; then, after the water in the small fixture traps had been measured, at a given signal we discharged all of the water closets on third, fourth and fifth floors, leaving all of the seals of the small fixtures and six water closets on second floor intact. A close watch was maintained to ascertain the result, and to our surprise none of the trap seals were broken in either the water closets or the small fixtures.

When the next test was made the plugs were left in at the roof, all of the small fixtures and the two water closets on the fifth floor were left intact. Then all of the water closets on the second, third and fourth floors were discharged, as before, with the same result as in the previous test.

In conclusion I wish to say that the fixtures for such buildings should be of some non-absorbent material which will not become crazed or broken, having a perfectly smooth surface to which soil will not adhere, but from which it will be removed by the flush of water. All fixtures should be set open and perfectly free from enclosed woodwork or other covers, which have a tendency to obstruct the light and prevent the circulation of air, and they should always be well supplied with water for flushing.

In Public buildings the walls and floors of toilet rooms should be constructed of some non-absorbent material and should be provided with windows to the outer air.

DOMESTIC ENGINEERING LOGIC.

Every business moves in one of two direction—up or down. Upward, if the men behind it are thoughtful, serious, earnest. Downward, if selfishness, greed and envy hold sway in the minds of the men behind the business. One sure indication of the direction a business is traveling is in the quality of goods used. If they are high grade, bearing the maker's name and guarantee, it is certain that business is growing upward. If poor goods, substitution and deceit characterize the material,—watch out. That business is on the toboggan.

TINSMITH AND TIN SOLDIER.

The colonel of a regiment was a crude joker, and often managed to get himself disliked. The colonel has his long service decoration and other "peace" medals, and wears the ribbons thereof very proudly. In another regiment at the Niagara camp this summer was a grey-haired captain who fought in the Northwest Rebellion and the South African war. In civil life the captain happens to be a master tinsmith.

The colonel spied the captain come come down the lines one day and thought he would try some of his own scintillating wit.

"Ah," said he, "Here comes our tinsmith captain."

The captain heard him, and with a significant glance at the colonel's ribbons, remarked:

"Yes, sir. We manage to have a tinsmith captain as well as a tin soldier colonel in the camp this year."

Then he walked on. The colonel was evidently hard hit, and wisely said nothing more.

Master Plumbers' and Travelers' Picnic at London

Londoners Set An Example Which The Trade In Other Cities Should Follow—Masters And Travelers Co-operate In Arranging A Saturday Outing — Visitors Present from Toronto, Montreal, St. Thomas And Other Places.

What should be the first of a series of outings held by the trade in Ontario was pulled off at London on Saturday, July 24, when as guests of a joint committee with Russell Wright, of Noble & Rich, master plumbers and James Glennister, representative of the Dominion Radiator Co., as joint secretaries, a large crowd visited Springbank, London's picnic resort and enjoyed a lively afternoon and evenings's fun.

Most of the travelers selling heating and plumbing supplies who visited London during the week laid over to enjoy the festivities, while others came from Toronto and outside places to have a jolly week-end.

The program commenced on Friday night with a reunion at the Travelers' Club, when an impromptu program of music and songs showed that much talent exists under the hats of the men who carry satchels full of samples, catalogues and expense accounts. Charlie Oldacre's rendition of "Me und Gott," and "If I only had a moustache like the Kaiser," were particularly mirth provoking. Another Hoosier Dutchman, C. H. Bakemeyer, of the Wolverine Brass Co., was a close second with his "Down where the Wurzberger flows."

THE BALL GAME.

On Saturday at noon the commisariat wagon moved down to the seat of war, some of the picnic party going down by electric car while others took the water-wagon route. Arriving at the park the ball game was promptly called and a full nine innings played resulting as follows:

Travelers	2	1	1	3	0	4	6	0	0	—17
Noble & Rich.	0	2	3	0	3	2	0	8	x	—18

Wilkinson, who pitched for the travelers, gave way to a substitute in the eighth innings, but he had to get his glass arm working again in order to stop the slaughter, the journeymen making eight circuits of the bases before being retired.

After the ball game supper was announced and the way Gordon Ritchie disposed of sandwiches was a sight to behold. Ernie Wilkinson came a close second by eating fourteen tomatoes and Jack Wilson was awarded third prize with his record of five pieces of pie. Fortunately there was plenty of eatables so others did not suffer as a result of the big eating. The health of the London master plumbers (and the ladies who brought the picnic baskets) were heartily toasted with lemonade and coffee.

THE RACES.

Next came the races and in the cool of the evening these provided a fine wind-up for the day's fun. The married men's race was a hummer with Ernie Wilkinson and Ben Noble leading the crowd across the tape. Then the fat men gave an exhibition with Jim Glennister romping in ahead of The Plumber and Steamfitter editor and a few others.

The journeymen's and apprentices' races were warm affairs but not nearly so laugh producing as the biscuit race, an event in which the winner was the man who first ran 100 yards and then completed the mastication of a big sandwich. An apprentice on Noble & Rich's staff won the first prize of a box of Cascarets.

Ernie Laidlaw proved himself no mean athlete by handily winning the travelers' race in 10 1-5 seconds and coming second in a jumping contest with a running jump of 16 feet. Fred Ellis and Lawrie Anthes got second and third in the travelers' race and Tom Rowan, of Noble & Rich's staff beat Laidlaw's jump by two inches. In the master plumbers' race, Ernie Russell beat Will Skelly, jun., with Ben Noble, who was scratch man, a poor third. Fred Ellis took first in the smoking race and George Fisher won the rifle shooting contest.

The ladies' events were keenly contested, Mrs. Glennister winning the married ladies race from a big field and Mrs. Ben Noble the bean race. In the latter contest beans were rolled along the grass with the aid of toothpicks. The ball throwing event was a fine exhibition of skill, Miss Boomer defeating Miss Holman by a throw of about 100 feet.

Some of the crowd at the plumbers picnic at London. From left to right (top row)—Weston Wrigley, editor Plumber and Steamfitter; E. A. Laidlaw, Standard Sanitary Manufacturing Co.; C. H. Bakemeyer, Wolverine Brass Co.; F. E. Ellis, Gurney-Tilden Co.; E. A. Wilkinson, Lunkenheimer Co.; James Glennister, Dominion Radiator Co.; C. G. Johnston, Good Manufacturing Co.; A. B. Bailey, James Robertson Co.; J. C. Wilson and J. F. Birchard, King adiator Co. Bottom row—Wm. Skelly, jr., Gordon Ritchie, E. A. Russell and Ben Noble, master plumbers. —Photo by C. E. Oldacre.

The races over, most of the party took cars back to the city where there was a final program at the Travelers' Club, with songs and speeches all round. Probably the central feature was the one round boxing bout between Bailey and Grant, the former being given the decision on points. Votes of thanks were tendered to the committee in charge of the picnic and to Ben Noble, who had been the energetic master of ceremonies during the day.

WIPED JOINTS.

The opinion was generally expressed that the picnic should be repeated and that it would be a good idea for the master plumbers in other cities to adopt.

Russell Wright was a hard worked man during the ball game and races.

Fred Ellis in the act of making a three bagger.

The editor of The Plumber and Steamfitter was offered the job of umpiring the ball game but had to decline as he was official photographer.

Ben Noble's $300 horse drew the water wagon from London to Sprinkbank. He nearly ran away near the reservoir, however, and Bill Bailey, who was getting a free ride down on the wagon, fell off in a hurry. A bottle of listerine fixed him up.

If Jack Burchard had made another home run the ball game would have ended in a tie. And if Charlie Oldacre had been supplied with a cricket bat to hit the ball, the travelers might have won out.

Chester Stevens, of the Empire Manufacturing Co., who got married a fortnight ago, was too busy laying carpets to attend the picnic.

Lawrie Anthes used the rope fire escape on Saturday morning. He says every hotel ought to be supplied with

Lawrie Anthes, C. G. Read, Gordon Ritchie and William Skelly, junior.

soil pipe stacks outside each window. Guests could, he contends, slide down the pipes easier than crawling down on a rope.

A big crowd visited the sulphur baths on Sunday morning.

The story of "Little Willie" will be told by Jack Wilson to any one who inquires.

Oldacre Lead Them to The Pump But He Couldn't Make Them Drink.

Fred Ellis spent Sunday writing to Miss ————, Toronto. As his best friends know, Fred prefers the clinging ivy to poison ivy.

Jack Birchard was scratched from the fat men's race as he weighed over two hundred.

Gordon Ritchie, of the John Ritchie Plumbing Co., Toronto, and W. Potticary, of Potticary & Dixon, St. Thomas, were the only master plumbers from out of town. Next time there will be more.

There was quite an argument over Laidlaw's jump of sixteen feet. Ernie said he could jump nineteen and one-half feet if in condition. Jack Wilson questioned this, whereat Lawrie Anthes said he could jump third-of-three feet, saying it in such a way as to make it sound like thirty-three feet. It looked as though a bunch of money would be hung up on the event but some one dis-

Mrs. James Glennister And Her Three-Year-Old Daughter.

covered the deception and Lawrie said he would buy.

THE TRAVELERS PRESENT.

James Glennister, Dominion Radiator Co., Toronto; C. E. Oldacre, Gurney Foundry Co., Toronto; John F. Birchard, King Radiator Co., Toronto; John C. Wilson, King Radiator Co., Toronto; Fred E. Ellis, Gurney Tilden Co., Hamilton; E. A. Wilkinson, Lunkenheimer Co., Cincinnati; L. L. Anthes, Toronto Foundry Co., Toronto; E. A. Laidlaw, Standard Sanitary Mfg. Co., Toronto; C. H. Bakemeyer, Wolverine Brass Co., Chatham; Charles G. Johnston, Good Mfg. Co., New York; A. B. Bailey, James Robertson Co., Montreal; Geo. Fisher, Canadian Fairbanks Co., Toronto.

George Watts and A. R. Colcott were the battery for Noble & Rich's team, the other members of the winning nine being T. Rowan, first base; P. Cusilito, second base; Earle Pinch, third base; W. Dean, shortstop; T. Reardon, left field; W. A. Cox, centre field, and L. Kelahan, right field.

THIS IS KEEN COMPETITION.

C. H. BAKEMEYER.
Who outdove Johnston.

Charlie Bakemeyer, of the Wolverine Brass Co., and Charlie Johnston, of the Good Mfg. Co., are two travelers who sell competitive lines of plumbers' rubber goods, and each is anxious not to let the other get ahead of him.

As readers of The Plumber and Steamfitter know Johnston distinguished himself recently by diving bag and baggage from the Niagara River steamer into the cool drink running beside the wharf at Lewiston, N. Y.

When Bakemeyer heard of this he resolved to beat Johnston and win fame, and his opportunity was not long in coming. He left Toronto one day on the Fort Erie race special, and as the train was dashing past Hamilton station, he made his leap, not into water like Johnston, nor even into soft sod or cinders, but out onto the hard plank station platform. His grips weren't as good as parachutes, but they helped some in making the landing, even though the samples and other contents "strewed the deck," as Casabianca once said.

What the station platform did to Bakemeyer would be as impossible to relate as it would be to repeat what he said when his wind returned. Anyway he beat out Johnston and that's going some.

Both Bakemeyer and Johnston have been buying recently.

Contracts for the erection of the Bank of New Brunswick's new building at Fredericton, have been awarded. The plumbing and heating will be done by R. Chestnut & Sons, Fredericton.

A case of interest to plumbers was tried in the Victoria police court last week. A business firm was summoned to appear to answer the charge of making plumbing connections without a permit. A fine of $20 was imposed. Magistrate Jay said that the by-law must be observed by all. The requirements were plain and in the case of a large place of business, where a number of employees were engaged, it was of the utmost importance that the plumbing arrangements should be constructed to agree with the by-law requirements.

CAUSE AND EFFECT.

C. E. OLDACRE.
Gurney's Genial German.

Oldacre ate some oysters,
Then he ate a clam;
Next he ate tomatoes,
And followed up with jam.
Oldacre then drank lemonade,
And on top of this took beer.
Then Charlie wondered
Why he felt so queer!
Whoop came the oysters,
Whoop came the clam,
Whoop came the tomatoes,
Whoop came the jam,
Whoop came the lemonade,
Whoop came the beer.
Then Charlie knew,
Why he had felt so queer.

The tender of the Canada Iron Corporation, Londonderry, was accepted for special castings for new pumps for Moncton's waterworks system.

Charles R. Crane, of Chicago, vice-president of the Crane Co., has been appointed as United States Minister to China. Mr. Crane is a native Chicagoan, having been born in that city August 7th, 1858. He is a son of R. T. Crane, founder of the Crane Co.

BEN NOBLE.
Master of Ceremonies.

J. F. BIRCHARD.
The home-run artis

WESTON WRIGLEY.
Ye editor aking notes.

E. A. LAIDLAW.
Who can jump some.

C. G. JOHNSTON.
The Niagara Swimmer.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Stevens & Collard, plumbers, Montreal, have dissolved.

Stevens, Duquette & Co., plumbers and contractors, Montreal, have been registered.

H. H. Griffiths' plumbing business at Nanaimo has been taken over by H. B. Evans.

T. Rich, of Noble & Rich, London, is holidaying at the Mineral Springs at Mt. Clemens, Mich.

Fraser & McNab, plumbers, North Vancouver, are succeeded in business by Fraser & Carpenter.

Chas. G. Long, who has been conducting a gas-fitting business at Wallaceburg, has moved to Buffalo.

The St. Catharines council accepted S. P. Gourlay's tender for 2-inch pipe for the waterworks system at $13.25.

During August the plumbers of Goderich will join the half holiday movement, closing their stores Wednesday afternoons.

Odessa Paquette, president and Louis Payette, sales manager, of the Star Iron Company, Montreal, were visitors in Toronto this week.

The contract for the hot water heating in the new Swanson business block at Dryden, has been awarded to J. G. Hayes of that town.

E. W. Bishop, late of Greenwood, B.C., has secured a position in the plumbing department of the Morrison-Thompson Hardware Co., Kelowna.

R. W. Harrison, former plumbing and heating contractor, is erecting a number of houses at Toronto—13 in all—at a cost of about $20,000.

Wm. Skelly, London, has been doing the plumbing and Noble & Rich the heating work on Smallman & Ingram's new departmental store at London.

F. C. Hunt & Co., master plumbers, London, will soon move into a new shop they have erected on the corner of Richmond and Kent Streets in that city.

James E. Fiddes, of the Jas. Morrison Brass Co., Toronto, with his wife and daughter, is holidaying in the Muskoka Lake region, with Port Carling as headquarters.

The new building being erected by Scott & Bennett, plumbers, Galt, is making rapid progress, and when completed will be one of the finest business blocks in town.

The contract for the rewiring of the basement and ground floors of the Fort William post office building has been awarded to the Western Electric Supply Company.

Eugene Payette, has awarded the plumbing and heating contracts for the extensions to two stores on Notre Dame street, for the Estate Masson to Cadieux and Briard.

The Galt plumbers are extremely busy these days. A large number of new houses are being erected and without exception these are being fitted up with the most modern sanitary conveniences.

The baseball fever has hit Mitchell Bros., (Chatham's new plumbing firm) who have put a team of their own in the local field. All but one of the new team are members of the Mitchell plumbing staff.

The plumbing and heating business carried on by J. H Neelands & Son, Barrie, has now changed hands and in future will be owned and conducted by J. J. Neelands. J. H. Neelands is going to Winnipeg to settle.

Joseph Bell, Toronto representative of the Star Iron Company, has been succeeded by C. E. Pickard, master plumber, 646 Yonge street, Toronto, who has sold his business to John West. Mr. Bell has accepted a position with the King Radiator Company, Toronto.

E. G. Hilgartner, plumber, 61 Colborne street, Brantford, announces a "retiring from business" sale. He is disposing of all stock before August 1, owing to inability to secure an extension of the lease on his present quarters.

The tender of W. H. Johns being the lowest was accepted for Gravenhurst's waterworks system. His prices were: for 10-inch, 27 cents; 8-inch, 25 cents; 6-inch, 24 cents; 4-inch 23 cents; hydrants, $2.25; valves, $2.25.

H. F. Dickie, who established a plumbing business at Welland last March, has a nice shop and reports business as having been good with the outlook bright for a large number of new buildings in the near future.

W. G. Harris, of the Canada Metal Co., who recently purchased the old Ontario Lead and Wire Co.'s shot tower, has been granted a permit for the erection of a shot tower, 170 feet high, on Fraser Avenue, Toronto. The tower will will cost $2,850.

Windsor has secured another addition to its industries in a branch of the Detroit-Milford Sanitary Manufacturing Company, which is to make the border town its Canadian headquarters. A factory has already been opened for the manufacture of plumbers' woodwork, etc.

The contract for the new boilers for the Toronto Normal School heating plant has been awarded to the Polson Iron Works. The price is $1,895. The Institute for the Blind at Brantford is also getting a new set installed for which the Waterous Engine Works will receive $1,940.

Wm. Guy, aged twenty years, living at Toronto, was arrested recently by Detective George Kennedy, on a charge of stealing plumbers' supplies from George Wallis, by whom he was employed. Guy is alleged to have stolen supplies to the value of about $50, selling the stuff at various second-hand shops.

The Ottawa branch of the International Plumbers' and Gas and Steamfitters' Union elected officers last week for the next term. Harry Lee, who has held the office for four years, was re-elected president; W. Kennedy, vice-president; S. Daughtry, financial secretary; Rolla Taggart, recording secretary; Eugene Cadieux, business manager.

Arntfield & Jones, Chatham, Ont., were the successful tenderers for the gasfitting contract at the isolation hospital there, the contract price being $65.

Robt. Ross, of Kingsville, has purchased outright the plumbing and tinsmithing department of C. A. Willett & Co.'s hardware store at Leamington, formerly owned by Fred Mettam. He will carry on the business in the premises above the Willett store, as well as his former business in Kingsville.

In the plumbing line, Winnipeg reports say all are busy, with prices perhaps a little tight. Many workmen have their eyes turned toward that part of Canada at present, and a leading plumber told Plumber and Steamfitter that none but first-class mechanics should come out. There was room for these, but only the best were wanted, as the standard of work was high and ability was an absolute requisite to hold a position.

W. L. Clucas, of the W. L. Clucas Plumbing Co., St Louis, Mo., has been spending a couple of weeks holiday at the Lake of Bays Muskoka district and reports a very pleasant time, with good fishing. Mr. Clucas says business is exceptionally good this year in St. Louis, and he thinks a record in the building trade will be made as the outlook is encouraging. The plumbers scale of wages there is $6 for an 8-hour day. Laborers get $2.50 a day. Mr. Clucas has 18 plumbers in his employ. He is a former Canadian who has done well in the U.S.,

and he comes north every summer to spend his vacation.

Rosedale (Toronto) residents are being canvassed by G. E. Bradshaw, manager of the Dominion District Steam Heating Co., who is desirous of establishing a steam heating plant in Rosedale. The plan is to erect a plant and pipe the steam manufactured there under ground through the streets to the houses, where it will enter the pipes of the house heating system. It can be turned on and off at the meter just as gas is, and heat will be sold on the same plan that gas is sold. If successful in securing the signatures of enough Rosedale residents to back them, the company will make application to the city for a franchise to operate such a plant. The only place in Canada where the experiment has been tried is in Chatham, Ont., where, for the last two years the business section of the town has been heated by the waste steam from the electric railway power plant. Over three hundred plants have been established in different parts of the United States, the pioneer being at Lockport, N.Y.

What might be termed a serial theft, in which A. Prud'homme & Fils, Montreal were the losers, was brought to an end recently by Detectives Demers and Brabant, who arrested two men, one on the charge of stealing over $2,000 worth of plumbers' supplies, and the other of receiving a quantity of the same. The game was operated by Philip Richard, a clerk in the employ of Prud'homme & Fils, and Joseph Primeau, a plumber. The latter received over $1.000 worth of the goods, which he sold for $500. Primeau used to buy his supplies legitimately at the Prud'homme establishment, but last fall he found a cheaper way of getting the stuff. He got next to Richard, and the outcome of the collaboration was that Primeau could secure supplies without troubling Prud'homme & Fils to put the deliveries through their books. Arraigned before Judge Leet, both of the accused pleaded guilty. They will be sentenced later. Detectives Brabant and Demers, who worked the case, recovered $1,000 worth of the stolen goods, consisting of baths, sinks, porcelain wash basins, tanks and piping, which almost blocked the passage way in the court house when piled there as an exhibit.

C. L. Anthes, of the Toronto Foundry Co., is on a trip to Winnipeg and Edmonton. He will endeavor to shoot some gophers and other big game before returning east.

A. W. Humphries & Son, Parkhill, have secured the hot water heating, plumbing and galvanized iron work contracts on the new Roman Catholic priests' residence at Mt. Carmel, Ont. They have also landed the contract for the plumbing and tinsmithing work on the new post office at Parkhill.

W. E. Skinner, manufacturers' agent for electrical and mechanical specialties, Winnipeg, has been granted a franchise by the Winnipeg city council for the erection of a steam heating and distributing plant. A special by-law is being prepared at present outlining the nature of the franchise. According to the proposed by-law the concern will pay nothing for the franchise for the first three years, but will pay 2½ per cent. on the gross receipts after that time, a bond of $25,000 will be issued guaranteeing the city against damage to the streets in the insallation of the plant. Mr. Skinner has not submitted the plan of the station, and he is at present working up capital and organizing a company. The city council were quite dubious about the concern undertaking such a tremendous work, but Mr. Skinner sufficiently impressed them with his sincerity and the feasibility of such an enterprise, and there is considerable support given the idea in local circles.

As a result of the warnings given out by F. A. Cambridge, city electrician, Winnipeg, that great damage was being done to domestic water pipes and high pressure mains by electrolysis, Winnipeg city council engaged Prof. L. A. Herdt, of McGill University, Montreal, to examine the water mains and report specifically as to the cause and extent of the damage. Prof. Herdt has made an alarming report to the city officials, to the effect that thousands of dollars damage had been done to iron and lead pipes and the high pressure mains by electricity escaping from the rails of the Winnipeg street railway. The report bore out in every detail the warnings of Mr. Cambridge, which the city council has heard for the past nine years. The professor made it clear that the board would have to take instant measures to prevent great loss to the city, and he stated that the work of erecting sub-stations on the electric railway, and rebonding of the street car rails should go on night and day until completed. The series of photographs produced by the professor showed clearly the serious manner in which the water mains were being damaged, and several maps which he produced showed that the current was escaping from the rail joints at a rate which if not immediately checked would soon affect the mains in the central portion of the city, if they were not already damaged. The professor stated that the remedy could only be effected by the railway company as the city could do nothing to protect its piping system from stray currents.

Since this report has been submitted the railway company have taken steps to remove the cause of the trouble by rebonding the tracks of their system. They have also began the erection of substations which will decrease the concentrated current in the tracks.

SANITATION IN LIVERY STABLES

Winnipeg, which is winning a creditable record for progressive sanitary legislation, now governs livery stables under regulations adopted by the Board of Health, April 15, 1909, as follows:

Under the provisions of By-law No. 5456 al applicants for license for livery barns or feed and sale stables must obtain from the medical health officer a certificate that the premises in which it is proposed to carry on such business are suitable and satisfactory for that purpose, and that they do not contravene any laws, by-laws, or regulations governing the same. Until such certificate is issued, the license inspector shall not issue any license in respect of any such place. The following regulations are hereby made and approved by the committee on health of the city council, as applicable to such premises, and all intending applicants for license, or for renewal of license, shall comply with the same. These regulations shall also apply to all private stables in the city where more than five (5) horses are kept, save and except the obtaining of a license.

Drainage.

There shall be a proper and sufficient number of drains and sewer connections to efficiently carry off all liquid filth, subsoil water, and rain water, and the same shall at all times be kept clean and in sanitary condition so that no offensive odor shall be allowed to escape therefrom.

(a) Every stable, and the yards and appurtenances thereof, shall, where possible, be connected with the sewer in the street or lane on which the stable fronts or abuts.

(b) Every livery barn or feed and sale stable shall be provided with an impervious washing rack, the same to be not less than twelve feet by ten feet and constructed with a floor of cement, glazed bricks, tiles laid in cement, or other impervious material. There shall be a properly trapped sewer connection to said rack so that all the water used thereon shall be efficiently carried off to the sewer.

(c) The overflow from all drinking troughs shall be properly connected with the sewer.

(d) There shall be adequate and sufficient eave troughs and leaders to all stable roofs and other buildings in connection therewith, to effectively carry off all rain water, and the rain leaders shall

be properly connected with the sewer, and the same shall at all times be kept clear and in good working order.

(e) No horses or vehicles shall be washed or cleaned on any public street or lane.

(f) The liquid from the floors of stalls, and passages between same, shall be properly drained into gutter at the rear end of the stalls, such gutter to be not less than four inches in width and two inches in depth and running the full length of the stalls.

Water Supply.

All stables shall be provided with an adequate supply of pure water for cleansing and flushing purposes.

All floors shall be of good material properly laid and graded so as to drain all liquid deposited thereon to the gutters in the rear of stalls.

Light and Ventilation.

Every stable shall be provided with adequate natural light from windows placed in the external walls or roof, the area of which shall be not less than one-twentieth of the floor area.

Each stable shall have a ventilator constructed through the roof from the ceiling of the stable, of a sectional area of at least two square feet for each ten horses, with a similar proportional area for a greater or lesser number of horses.

Each stable shall be whitened with whitewash each six months, and not more than two months previous to the granting of a license hereunder.

The owner, agent or occupant of any stable, when deemed necessary by the health inspector, shall cause his stable to be disinfected to the satisfaction of the health department.

Fly Screens and Manure.

Each and every window and door or other opening in any occupied stable in the City of Winnipeg, through which flies or other insects have or may have access, shall be properly protected with fly screens from May 15th to November 1st in each year.

Every owner or agent of any stable shall construct and provide a suitable manure bin with closely fitting cover, in which shall be deposited all the manure, litter or other refuse from said stable, and such manure bin shall be placed where the health inspector may direct.

All manure from livery barns or feed and sale stables, where more than eight horses or cattle are kept, shall be removed daily, except Sundays, before 10 a.m. No manure or other refuse shall, under any pretense whatever, be placed on the ground or on any street or lane, and no manure bin shall be placed on or project over the line of any street or lane.

The Biological Method of Sewage Disposal

By E. Dean Wilkes, B.A. Sc., Toronto.

Among the numerous problems that have troubled the human race, that of adequate sewage disposal is one of the oldest and most worrysome. In primitive times the simple and effective method of burying the sewage was found to be satisfactory, but with the development of towns and cities this problem has proved more and more vexatious. Numerous theories for solving the difficulty have been advanced, and many methods tried, with the result that we have now the method known as biological sewage disposal. It is my purpose to discuss the principles underlying this method of disposal, and some of the details common to most small plants based thereon.

Biological sewage disposal depends upon myriads of micro-organisms known as bacteria. These break up the sewage into simpler compounds, gases and acids which in their turn are further changed, resulting in harmless salts and minerals. These bacteria are divided into two main divisions depending on the work they do, and their manner of doing it. They are called anaerobic and aerobic bacteria. While one kind is sometimes used exclusively for purposes of disposal, better results are generally obtained by employing both kinds.

The anaerobic bacteria are those that are generally made use of first, as a preliminary method. the bacteria gasify and liquify some of the solids, breaking them down into simpler compounds. These microbes, sometimes known as hydrolizers, thrive best in the dark and with a limited air supply. These are the bacteria that are grown and made use of in cess-pools and septic tanks.

The aerobic bacteria are grown and used in the various filters used for disposal. They complete the purification by oxidizing and nitrifying the remaining impurities left by the anaerobes. This is accomplished by using the oxygen in the air and the various bases in the soil. The aerobic bacteria, therefore, require an abundance of air, while light is also an advantage. The aerobes attack such compounds that the anaerobes find difficult to digest, often finishing in a few hours that which it would take their brethren as many weeks to finish.

Operation of Septic Tanks.

The commonest method for small disposal systems is that of a septic tank and filters. The tank, the place where the anaerobic bacteria are cultivated, is used as a preliminary method, while the filters, the scene of operations for their aerobic brethren, complete the work. In large plants sedimentation tanks are sometimes used in place of septic tanks for preliminary treatment. In these tanks the bacteria are not cultivated, simple sedimentation being relied upon. In small plants, however, objectionable features prehibit the use of sedimentation tanks. A new form of tank is, however, now being used which has most of the advantages of both tanks and few of their disadvantages. By use of the above method 85 to 90 per cent. purification can be and is obtained.

The septic tank receives the sewage from the house drain and should be large enough to hold about eighteen hours' flow. The sewage on entering the tank has its velocity reduced to almost nothing, so that practically all the suspended solids are deposited. The liquor then flows off into a dosing chamber from which it is discharged onto the filters. After the tank has been in use some time the bacteria grow and attack the deposited solids, liquifying and gasifying them, while a scum forms on the surface. What solids are not either liquified or gasified are very finely divided so that they do not so readily clog the filters. Among the gases given off are hydrogen sulphide, marsh gas, carbon dioxide, etc., and as these sometimes form an obnoxious mixture ample ventilation is required. If the tank is near dwellings the fumes should be stacked.

The tank generally consists of two compartments. The tank proper and the dosing chamber. The inlet is well baffled so as to prevent currents in the tank which are injurious to sedimentation and disturb the bacteria. From the tank the liquor is allowed to flow over a weir into the dosing chamber. This weir is baffled to retain the scum. Sometimes a bent pipe is used in place of a weir and baffle the liquor being thus drawn off below the scum. In the dosing chamber is installed some automatic device for discharging the liquor at certain intervals. A form of syphon is generally employed which is brought into action when the liquid in the chamber rises to a certain height. The size of the chamber depends on that of the filters and should be just large enough to hold the amount allowed the filters each time they are dosed.

Sedimentation Tanks.

In large plants where constant attendance is necessary and where the initial expense is large sedimentation tanks are coming into favor. These tanks hold from two to four hours' flow with an upward velocity of about 1-6 inch per second. Septic action is not encouraged and the sludge is removed at least once a week and generally oftener. This tank gives a larger per cent. of solids removed than the septic tank, because in the latter the effervescence due to septic action prevents the settling of the finest particles which escape in the effluent. These tanks are very much smaller than the septic tanks and are consequently cheaper in first cost, but because of the frequent removal of sludge they are unsuited for small plants. A high percentage of pathogenic bacteria are removed in these tanks, being held with the precipitated solids. In the case of the septic tank these are carried into the effluent by the constant effervescence. Septic sludge is more compact and much less offensive than the sludge from these tanks.

A more recent tank combines these two tanks, keeping most of their good points. This, the Trevise, consists of a sedimentation tank, which instead of having its solids pumped out daily lets them settle into a septic tank beneath. The gases caused by septic action and the fine solids carried by them, are kept from the sedimentation part of the tank by the floor of the same, which also forms the sloping roof of the septic tank. This tank is rather expensive to construct on a large scale but is very satisfactory and for a small plant should not be very expensive. This tank is smaller than a septic tank and has the good effluent and large bacteria removal of sedimentation tanks together with infrequent sludge removal and a digestion of 25 per cent. of the solids.

Disposal of Effluent.

The effluent from the tanks is run onto filters about 3½ feet thick and made of various media, from sandy loam to fair sized crushed stone or clinker. Coarse sand gives the best results. Sandy loam requires more area than sand and gravel least of all. The doses should be intermittent and the beds well underdrained, otherwise the bacteria, which are aerobic, will not receive a good air supply and be drowned, rendering the beds useless except as strainers. In small plants the effluent from the tanks is generally run on to the filters from distributing tile which are placed about a foot below the surface. These tile are either common drain tile with open joints or else special tile for the purpose. The tile should be laid almost flat about .02 in 100. This with a dose that just fills the system and a rapid discharge ensures an equal distribution. Some of the tiles are turned up at the ends and left open for ventilation, especially if the filter is sodded over or used on top for a garden. The size of filter and rapidity of dosing will depend on the media. This decides the size of dose and therefore of the dosing chamber.

Disposal of Liquid Wastes.

Where there is no water closet in connection with the house, liquid wastes may be got rid of in the following way. Get a barrel or tank made holding about four hours' usage. Place a strainer in the top to catch stray solids, and connect the tank to a system of sub-surface tile, described above. The tank should have a cover and a stopper. Every three or four hours the stopper is removed and the liquid discharged into the drains. The solids may be buried. The system should be well underdrained.

From the above discussion it will be seen that Biological sewage disposal, which is nature's own way, gives a satisfactory method of disposal and also that this method can be adapted to small groups and also isolated houses for a reasonable outlay and with entire satisfaction.

MONTREAL'S OLDEST PLUMBER DEAD.

John Date, probably the oldest plumber in the Dominion, died last week in Montreal after an illness of about two months. Mr. Date was 86 years of age,

THE LATE JOHN DATE, Montreal.

and for some 65 years was connected with the plumbing trade. He was a hard and persevering man, and worked his way up until he possessed an extensive business, situated in the heart of the city. Te had not taken a very active part in the business for the past five years, but did not retire until last February when the business was taken over by his sons Henry and Samuel Date. It will be remembered by many plumbers that Mr. Date was the oldest master plumber to register at the National Master Plumbers' Convention at Montreal in 1907, and much interest was taken in so old and worthy a representative of the great plumbing industry. Mr. Date was born in Tavistock, Devonshire, England.

WHAT IS "STANDARD" ENAMELWARE?

In the Amherst Foundry Co.'s advertisement in The Plumber and Steamfitter of July 15, "Beaver Brand" enamelware was referred to as "the standard line of cast iron enamelware."

Obejection was taken to this by the solicitors of the Standard Sanitary Manufacturing Co., they stating that the word "Standard" should not be used in connection with any other enamelware than the products of their foundry.

A. J. Jackson, Toronto, Ontario sales agent for the Amherst Foundry Co., when the matter was drawn to his attention, said his company had no intention of using the word "standard" as a brand name, the term being used by the ad-writer in the ordinary usage of the word. "We are entirely satisfied with "Beaver Brand" as a trade name and have no desire to give our competitors offence," he said.

"It is evident that some one is reading The Plumber and Steamfitter very closely," added Mr. Jackson," as I did not notice the use of the word "standard" until you brought it to my attention."

PUBLIC COMFORT STATIONS NECESSARY.

Opposition to establishing a public comfort station in Pioneer Square in Seattle, for the convenience of exposition visitors, has brought inquiry from hotel keepers to know if the city expects the hotels to furnish toilet room service for the floating population during the remaining term of the Alaska-Yukon-Pacific Exposition, particularly on Sundays when the saloons are closed. The Hotel Monthly, in commenting on this subject say that "every large city should have public comfort stations in the interest of the general health, and it is unreasonable to expect the hotels to furnish unlimited accommodation in this respect to persons not guests of the hotel."

Letters from Correspondents on Trade Problems

The Editor Invites Short Letters and Sketches Describing Problems Met With or Original Methods of Doing Plumbing or Heating Work—Name of Writer Required, Though Not Necessarily for Publication.

ARTICLE BY "SANITAS" CRITICIZED.

Editor Plumber and Steamfitter,—In the July 1 issue of your paper I noticed an article by "Sanitas," dealing with water supply systems for country homes, in which the method of construction and instalation is so obviously wrong and so unnecessarily complicated as to warrent me, not only in the interest of our business, but also in the interest of those among the trade who are installing these systems in drawing attention to the objectionable features.

In the first place, it is probably unnecessary to point out that an absolutely air tight tank forms the very foundation of pneumatic water service systems, and that, in good practice, connections of any kind are never made to the tank above the water line where such can be avoided, and that every precaution is taken to prevent the compressed air from escaping, and it will take but a glance at the illustration used in connection with the article complained complained of, to show that this, which may be considered a fundamental principal, has been grossly violated.

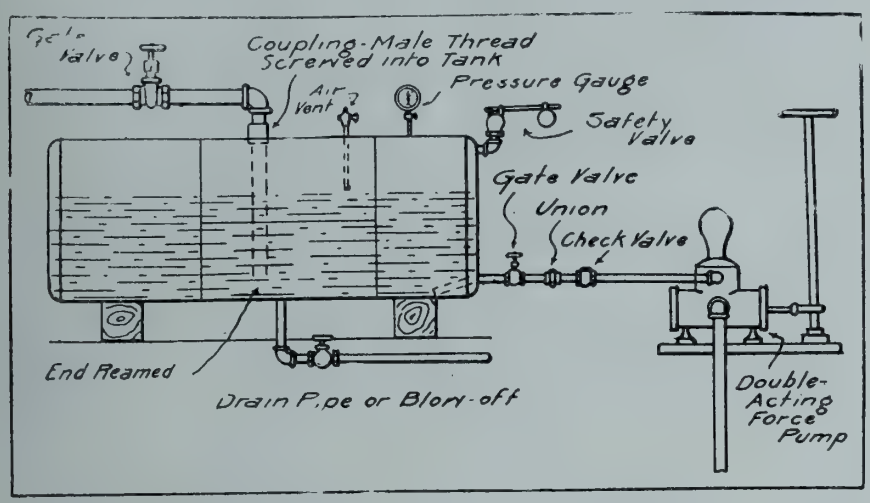


Fig. 1—Double Acting Force Pump Shown in the Article by "Sanitas."

In the first place three connections, namely the outlet, air vent and pressure gauge, are unnescessarily connected to the top of the tank. The outlet main, as will be seen in the other illustration, should be connected at the bottom of the tank, where it will always be below the water line, and consequently any leak that might develop would allow the escape of water and in consequence would be at once discovered. The air vent is absolutely unnecessary, and the water gauge almost invariably permits escape of air when placed in this position and for that reason, in good practice, is placed on the water pipe leading from the tank to the plumbing fixtures.

The worst feature of all, however, is the presence of the safety or relief valve above the water line. The merest tyro will observe that should the tank be pumped to a pressure sufficiently high to cause this valve to operate the imprisoned air, upon which the whole success of the system depends, will escape leaving the water in the tank.

The only connection above the water line used in the Peerless Tank supplied by our company is that where the upper end of the water glass joins the latter. This obviously is unavoidable, but too much emphasis cannot be laid upon the statement that all other connections must be made to the tank below low water mark.

No. 3.—Connections to Peerless Tank.

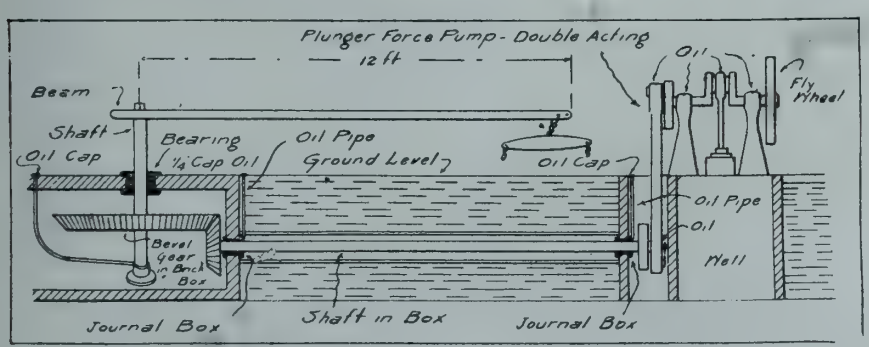


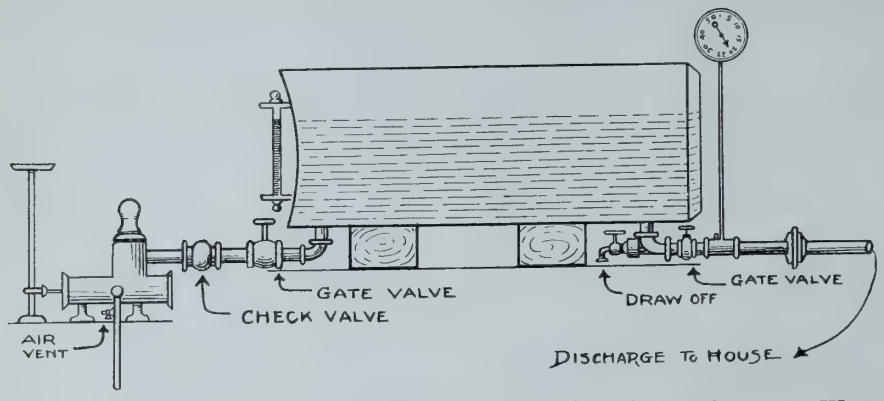
Fig. 2—Type of Pump Operated by a Horse or Mule Shown in the Article by "Sanitas."

The simplicity of this connection will appeal to the trade and are of such a character as to leave no possible room for mistakes to be made and should any systems have been installed in the manner suggested by "Sanitas" the method of overcoming the difficulties that have almost certainly been encountered will at once be apparent.

Yours very truly,
M. J. QUINN,
National Equipment Co.
Toronto, July 30.

TAP WATER TANKS AT BOTTOM.

Editor Plumber and Steamfitter,—In your issue of July 1, "Sanitas" decribes a country water system. I have had considerable experience in installing



Method Used By Grimsby, Ont., Plumber In Making Connections To Water Tanks.

such systems and am taking the liberty of sending you a sketch showing my method of piping for same. On the suction pipe I place an ⅛ or ¼ inch pet-cock to supply air in case the tank becomes water logged.

For instance a tank is three parts full of water with possibly only 15 pounds pressure and to overcome that I open this pet-cock and pump air with the water until the pressure is increased to 30 or 40 pounds. You will find that the air will pump more readily into the tank with a low water line.

Another point is the connection taken from the top of the tank. I always try to avoid taking any connections from the top of the tank and try and have my tanks tapped only in the bottom and one end for the water glass. Air is so much more difficult to contain than water, and unless the threads and fillings are perfect, it is difficult to get a perfectly tight joint. Therefore my reason for having all tappings in the bottom. It was with much pleasure and profit that I read the article and am offering this not as any standard but merely what experience has taught me in regard to this system.

Thanking you for these helpful hints which appear in your valuable paper, I am

JAS. WRAY,
Rodgers, Wray & Greenway.
Grimsby, July 20.

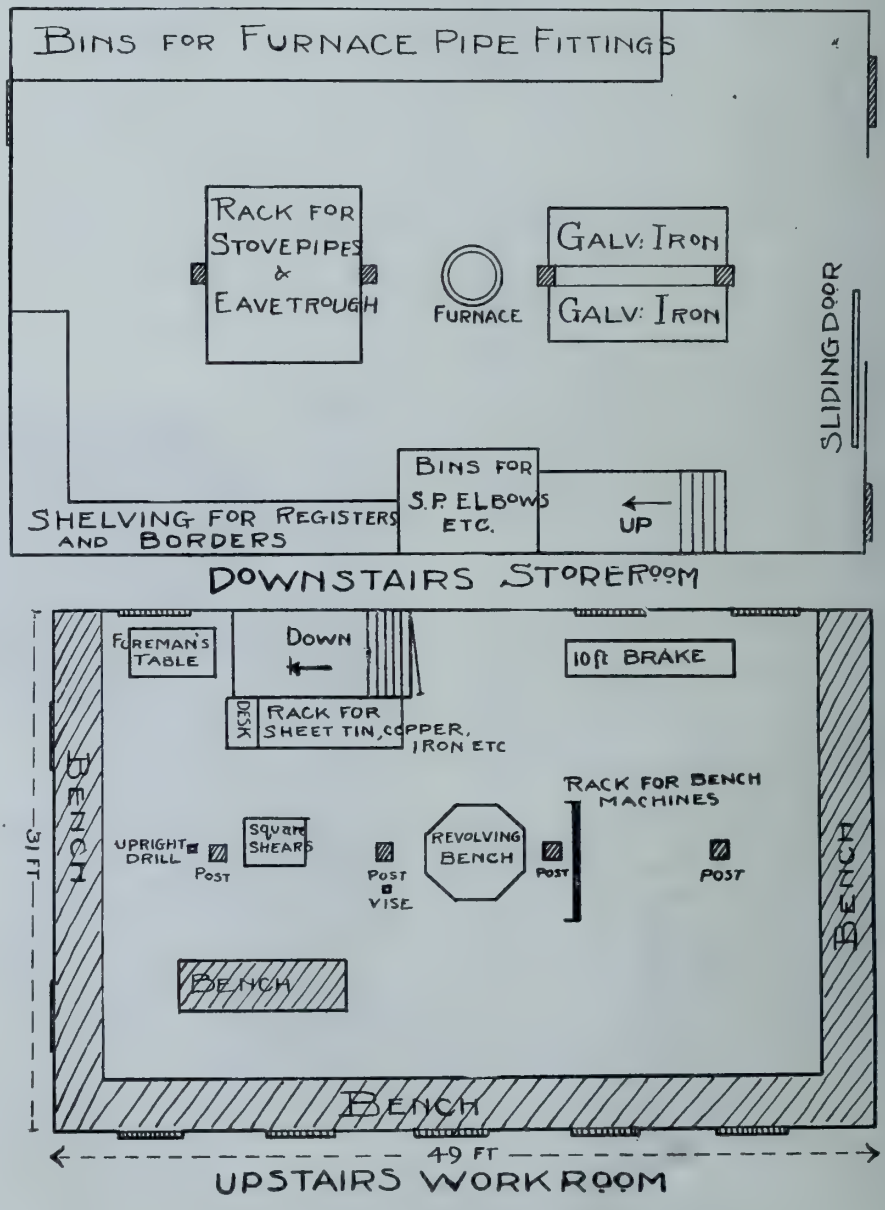
WORKSHOP ARRANGEMENT.

The Somerville Hardware Co., Edmonton, however, have what is claimed to be one of the best arranged shops in Western Canada, and two sketches of their work and storerooms are shown herewith.

In the downstairs section stock is carried, bins and shelving being placed along the wall and racks on the centre of the floor. Upstairs there is a bench around three walls of the shop, the bench being ironed with ⅜x3-inch bar iron, all stakes having iron socket holes. There is also an octagonal revolving bench in the centre of the shop for machines for crimping, grooving, seaming, etc., the bench allowing the workmen to remain in one position while using different machines. Another bench at one end may be extended the length of the room by planks and supports. This bench room is useful when making up rolls of iron, roofing, stores of these goods being kept. Underneath the benches on the walls is an open space for storage purposes, scraps going into boxes. Lockers are placed on the wall between each window for workmen's tools. Furnace stock, etc., is carried in a separate warehouse. Other features of the shop arrangement are shown in the illustrations.

Readers of The Plumber and Steamfitter are requested to send the editor their comments regarding these shops or sketches showing the arrangement of their shops.

Guelph now secures its drinking water from a spring five miles from the city. The new system, including a two-foot conduit, cost $35,000.

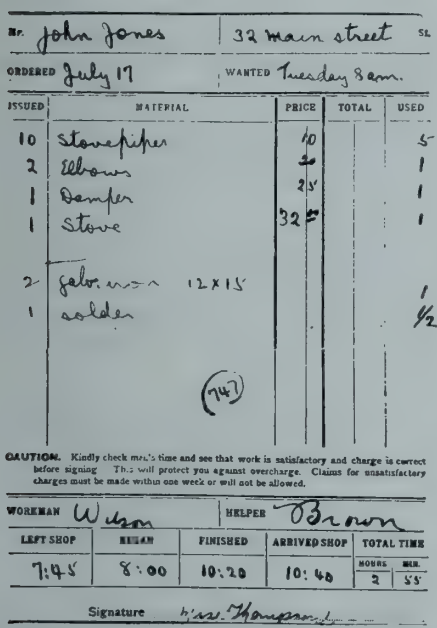


Plan of the Somerville Hardware Co.'s Tinshop at Edmonton.

A SIMPLE SHOP FORM.

One of the best shop forms the editor of Plumber and Steamfitter has seen for keeping track of jobbing work was drafted about three years ago by Ald. Albert Welch, stove-merchant and plumber, Toronto. It has been in use for three years and the only change Mr. Welch plans to make is to eliminate the "Began" and "Finished" departments in keeping track of the workmen's time. These have an advantage in keeping track of the men but lead to some confusion and frequently are not filled out.

The form is 8 x 5½ inches in size but could be made larger to accommodate the firm's name. When an order is received the name, address and date is entered along with the time the work is to be done. Then the goods to be supplied the workmen by the shipper



Mr. John Jones | 32 Main street | St.

ORDERED July 17 | WANTED Tuesday 8 a.m.

ISSUED	MATERIAL	PRICE	TOTAL	USED
10	Stovepipes	10		5
2	Elbows	10		1
1	Damper	25		1
1	Stove	32 50		1
2	galv. iron 12 x 15			1
1	solder			½

(747)

CAUTION. Kindly check man's time and see that work is satisfactory and charge is correct before signing. This will protect you against overcharge. Claims for unsatisfactory charges must be made within one week or will not be allowed.

WORKMAN Wilson | HELPER Brown

LEFT SHOP	BEGAN	FINISHED	ARRIVED SHOP	TOTAL TIME HOURS	MIN.
7:45	8:00	10:20	10:40	2	55

Signature Wm. Thompson

Shop Form Reduced From 5½x8 Inches.

are entered and the price filled in. Next the workman fills in his own and his helper's name also entering the time he leaves the shop. When the work is done he fills in the time he began and finished, the amount of material used and secures the signature of the customer.

If the order is C.O.D. he collects, otherwise he returns the form to the bookkeeper and a statement is mailed the customer showing the material and time charged for. The page on which the account is entered is marked on the form and if at any time a dispute arises the form is taken from the file and a complete record of the job is available with the customer's signature under the caution to check the workmen's time before signing.

Stove dealers or plumbers who have similar forms in use for keeping track of material and labor on jobbing work are requested to send samples to the editor of Plumber and Steamfitter.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

The municipality of Richmond, B.C., is planning for a water supply system.

The new well for Portage la Prairie auxiliary waterworks plant has been almost completed.

Bids will soon be asked for the construction of the proposed sewer system at Barrie. Probable cost, $30,000.

New Westminster's waterworks scheme is estimated to cost $378,000, of which Richmond municipality will contribute one-third.

The Burridge-Cooper Co., of Winnipeg, have been awarded the contract for the waterworks system at Estevan, Sask. Contract price, $50,000.

The construction of the sewerage and waterworks systems extensions at Saskatoon is nearly completed. More extensions will be made next year.

Work on the Carman, Man., waterworks system has begun. W. E. Porter, of Medicine Hat, has been engaged to work on and superintend the laying of the water mains.

City Engineer Benzie, of St. Catharines, estimates the cost of the proposed sewer on York Street at $7.200, and of that on Dacotah Street at $1,080. The recommendation in favor of this has been submitted to the council.

Vancouver is to suply the municipality of South Saanich with water. The South Saanich council have agreed to pay the whole cost of laying the pipes in the municipality. The city is to collect the rentals. Work, it is expected will commence as soon as possible.

Brant Bros, of Vancouver, who had the contract for building sewers at Prince Rupert, have thrown up their contract, and it is reported that the work will now be carried on jointly by the Provincial Government and the Grand Trunk Pacific.

The New Westminster city council also proposes to construct a new intake at the waterworks at Lake Coquitlam, which will give a capacity of over 1,000 inches of water. The work will be carried out by the Vancouver Power Company, which is increasing the height of the dam there.

A considerable amount of sewer construction is to be undertaken this season at Victoria. The most extensive work is that on Queen's Avenue, and immediate neighborhood, which it is proposed to operate by a system of pumps. To instal this system will, it is estimated, cost $11,700.

Victoria will undertake a large number of sewer works which have been held up. At a recent meeting of the streets, bridges and sewers committee, the list of works was passed and work on the construction thereof will be proceeded with at once. The cost of the works will aggregate $40,825. There is now at the disposal of the city for sewer purposes about $60,000.

New Westminster's plumbing inspector presented a report on the heating apparatus for the City Hall. He stated that it would require 3,770 square feet of hot water radiation to heat the building, exclusive of two small rooms. The cost for heating the City Hall by hot water would be $4,150 per year and by steam $2,050 per year. The selection of the heating system to be installed was referred to the special committee.

Contracts for erecting an eight-roomed school at Estevan, Sask., have been awarded as follows: General construction, not including excavation, to Bigelow Bros., Saskatoon, for $31,478, and plumbing, heating and ventilation to Thomas & Homer, of Winnipeg. The fan system of tempered air ventilation, with automatic control; Powers' system is to be installed, with air washer for future installation when desired.

N. T. Cooper, chairman, of Clinton's (Ont.) water works committee, writes that contracts for water works have been awarded as follows:—Pipe laying, T. M. Cullen, Huntsville, prices ranging from 18 cents to 30 cents per foot; cast iron pipes and special castings, Gartshore-Thompson Co., Hamilton, $32.20 per ton; construction of 80-foot stand pipe and foundation, Hunter Bridge & Boiler Co., Kincardine, $5,000.

Hamilton to-day is one of the most cheaply illuminated cities on the continent. The Cataract Power Company last night entered on the new five-year street lighting contract, by which arc lamps cost only $47.50, as compared with $84 paid under the old contract. Under the new contract about 600 arc lights, almost two hundred more than under the old contract, will be used.

add JPublic Buildings

General Building Notes.

James Smith will build a $20,000 residence at Toronto.

R. N. Wyse, Moncton, is erecting a new two-storey store.

Mayor Hopewell will erect a residential block at Ottawa.

H. S. Patterson will build a $30,000 apartment block at Winnipeg.

Tenders are being called for on a new Masonic Temple for Saskatoon.

A $16,000 brick hotel is to be erected at Vancouver for Sam Kee & Co.

John Flook, Chatham, Ont., will build a couple of modern residences.

James Davidson will build at Ottawa a row of four dwellings to cost $20,000.

A. M. Crofton has a permit for two dwellings at Sydney, C.B., to cost $5,000.

The Provincial Bank will erect a three storey stone front structure at Moncton.

T. H. Horn, Victoria, will erect a large business building at a cost of $20,000.

The Dominion Bank has purchased property at Moose Jaw, and will build shortly.

The Prudential Life Ins. Co., Newark, N.J., will erect an office building at Montreal.

J. D. Dinsmore, London, Eng., will erect a $50,000 business structure at Winnipeg.

The Provincial Bank, Newcastle, N.B., is calling for tenders to build a three-storey structure.

A building will be erected at Ottawa by the Public Works Dept. for the Royal Mint refinery.

Five pairs of semi-detached houses costing $16,000 will be erected at Toronto by B. Fraser.

The Trades and Labor Council are considering the advisability of building a labor temple in Hamilton.

C. Kane, Toronto, will build seven attached two-storey stores, offices and dwellings to cost $20,000.

James A Ogilvy & Sons have been granted a permit to erect a $611,000 department store at Montreal.

Four pair of semi-detached dwellings will be erected at Toronto by C. Coulter at a cost of $20,000.

The Edmonton Masonic Assn. will erect a four storey temple building at an estimated cost of $125,000.

Schultz Bros., Brantford, have been awarded the contract for a new Bell Telephone Co. building at Berlin.

Wm. Wright, proprietor of the New Sherbrooke, House, Sherbrooke, Que., is erecting an addition to the hotel.

John Hayman, London, has the contract for the erection of the $40,000 Hydro-Electric power station at Dundas.

A four storey block is to be built by Thos. H. Horne, at Victoria. The structure will be of brick and will cost about $20,000.

A permit has been issued for the new business block to be erected by Wm. Bownas at Victoria. The new building will cost $8,500.

The proprietors of the Queen's Royal, Montreal, have decided to build a large annex. The new addition will contain seventy-five rooms.

Tenders are being called for the construction of an addition to St. Ann's Convent at Victoria. The addition will be a handsome one, and will be four storeys in height.

Excavation work began a few days ago for a seven-storey warehouse to be erected for the Winnipeg Rubber Company at that place. The structure will be reinforced concrete and will cost aproximately $75,000.

The plans of H. S. Griffiths have been accepted for the new Y.M.C.A. building at Victoria. The structure is to be of four storeys, built of stone and brick and is to contain swimming pool 21 by 50 feet, bowling alleys, billiard room, boiler room and restaurant, all of which are to be located in the baseemnt. The building is to cost in the neighborhood of $70,000.

Recent building permits at Ottawa include: J. B. Labelle, solid brick dwelling, $2,900; R. B. Somerville, brick veneer dwelling, $1,600; H. F. McLachlan. solid brick addition to dwelling, $8,200; Dominion Transport Co., solid brick stable, $4,500; Grand Trunk Railway, solid brick office and freight shed, $9,500; Frank Brunke, double brick veneer dwelling, $2,500.

Some recent Winnipeg building permits are: Martha E. Orris, three-storey apartment block, $41,000. The building will be brick with basement. G. G. Teeter is the architect and Claydon Bros. builders. The Henderson Directory Co., two-storey business block. The cost of this building will be $18,000. Baldry Bros., house, $5,000. S. Williamson, dwelling, $2,000. R. R. Pattinson, house. $2,500. J. A. Bradley, store, $1 800.

Some recent building permits issued at Winnipeg include: M. T. McKittrick, four houses, $3,500 each; E. W. Andrews, house, $4,800; J. F. Parker, house, $1,500; J. T. Watson, house, $1,800; Hull Bros., house, $4,500; H. Hirsch, double dwelling, $3,000; Robert Gregg, house, $1,200; Charles Lumsden, two dwellings, $5,000; W. J. Hammond, additional storey on business block, $5,000, and an addition to the rear of the McIntyre block, to cost $2,900.

Public Buildings.

A new public school is proposed for Woodstock.

A new school building will be erected at Erieau, Ont.

A large skating and curling rink will be erected at Brandon.

A new theatre will be erected immediately at Chatham, Ont.

The new Virden hospital, now being designed, will cost over $12,000.

A new Oddfellow's Hall, to cost $16,000, will be erected at Toronto.

Toronto's Board of Education has a permit for the erection of a $28,000 school.

The contract for the new Hargrave school was let to John Gardiner, of Virden.

The Canadian Pacific Railway will erect a new station and freight sheds at Brandon.

The Morral Theatre Co., of St. Louis, Mo., will erect a $40,000 theatre at Saskatoon.

Extensive alterations and repairs will be made this summer at the Brandon Central school.

A permit has been issued to Chas. Baker for the erection of a frame church building at Brandon.

The Guelph Board of Education is said to be considering the erection of a technical school.

Belleville ratepayers will vote on July 5 on a by-law to raise $70,000 for school extensions.

Tenders have just been taken for the erection of a new Presbyterian church at Chateauguay, Que.

The C.P.R. will spend one and a half millions on extensions to the Windsor street station, Montreal.

Tenders are being taken for plumbing and building supplies for the Niagara Falls collegiate institute.

P. Maisonneuve has been awarded the contract to build the new $20,000 brick convent at Morinville, Alta.

Tenders are being called from the different trades for the erection of the new Moss St. School at Victoria.

The wardens of St. Barnabas Church, Victoria, have decided to have a new church built in the near future.

The contract for erecting a town hall at Estevan, Sask., has been awarded to Geo. T. Falkner, for $15,075.

Chatham will have a new opera house this fall. Plans are now being drawn for the erection of a new building.

W. H. Ellis & Sons have secured the contract to build the new Moose Jaw Anglican church on a bid of $29,803.

The Vonda, Sask., town school was recently destroyed by fire. The school trustees will rebuild on a better scale.

The congregation of St. Matthews' church, Estevan, Sask., are raising funds for the extension of their building.

The Holy Cross English Lutheran Church will build a church, school and manse in Nairn Place, Elmwood. (Winnipeg.)

The contract for building Claresholm's new school has been let to Zang and Musgrove, of Edmonton, for $18,274.

The Saskatchewan College a provincial residential educational institution for boys, is about to be established at Moose Jaw.

The Winnipeg Public School Board have been granted a permit for the Salter street school. The cost is estimated at $72,000.

The contract for an addition to the public school has been let to Kelly Bros. & Co., Winnipeg and Kenora for Keewatin, Ont., $8,500.

A by-law will be voted on in the near future to borrow $10,000 to build a town hall and police station at Killarney, Man.

Tenders will be received until August 2 for the furnishing and installing a system of heating and ventilating in the Chebucto school.

Wilson & Holmes, Ottawa, were the successful tenderers for the new Hintonburg school and the new St. Mary's school, Bayswater.

The Fernie city council has purchased a lot in the centre of the business section of the town on which they will erect a new fire hall.

The contract for the new Galt Hospital at Lethbridge has been let to J. McDiarmid & Co., of Winnipeg. The building is to cost $60,000.

The tenders for the erection of a two-storey frame school at Regina were opened and the contract of T. R. Davidson at $2,084 was accepted.

The Dominion Railway Commission has issued an order compelling the G. T. R. to erect a new passenger station at Guelph before September, 1910.

Reed & Reed, of Boissevain, have been awarded the contracts to erect the new Coleman block and the addition to the Methodist church at Killarney, Man.

The request of the Welland School Board for $17,000 to add two rooms to fourth ward school and four rooms to the central school has been acceeded to.

The contract for improvements to the Lindsay Street Separate School, Lindsay, Ont., has been awarded to Williams Bros., at an estimated cost of $8,000.

The Winnipeg school board at a special meeting awarded to J. H. Tremblay & Co., St. Boniface, the contract to erect the new Greenway school at a cost of $77,000.

The Catholic Church Extension Society have purchased 60 acres of land near Toronto, on which three buildings costing about half a million dollars will be erected.

The board of regents of Mount Allison College decided to proceed at once with the work of building the contemplated new stone ladies' college at Sackville, N.B.

An academy to be devoted exclusively to the educational requirements of approximately 200 girls and young women is to be established at Vancouver by the Sisters of St. Ann.

The Edmonton School Board have decided upon the erection of two small schools, one in Westmount and the other in the Norwood extension. Steam heating will be installed.

The contract for the construction of the new high school has been awarded to Everard & Oakes at about $38,000. James Rae was the successful tenderer at $9,000 for heating, plumbing and ventilating.

The contract for the excavations, masonry and brickwork for the St. Gregoire le Thaumaturge school for the Catholic School Commissioners at Montreal has been awarded to A. Pion, at a cost of $50,000.

Hamilton & Cannon, Lacombe, Alta., have been awarded the contract for the erection of a new school at Blackfalds at $3,000; T. C. King has prepared plans for a new Lacombe hospital building, estimated cost $3,500.

At a meeting of the joint committee of the Niagara Falls council and library board, the plans of C. M. Borter for the new library were accepted. Tenders will be called at once.

The contract for the erection of the new Grand Trunk Railway central station at Ottawa has been awarded to Peter Lyall & Sons, Montreal. The cost is estimated at $500,000.

Moncton, N.B., school trustees are considering the erection of a new school building consisting of two storeys and basement. A new sanitary plant will also be added to Victoria school.

The Toronto City Council are considering the advisability of submitting a by-law to the people to raise $250,000 for the construction of new school buildings, and repairing of others.

J. Seath Smith, Montreal, has awarded the general contract for the erection of St. Andrews church at Chateauguay, to Mr. Crawford, contractor, Huntingdon, Que.

The ground has been broken for the new Carnegie Library at Peterboro, which is to cost about $30,000. An isolation hospital is the next civic structure to be commenced.

The general contract for a four room brick school building for school section No. 1, North Grimsby Tp., Ont., has been awarded to D. Marsh, Grimsby, Ont. Contract price between $12,000 and $13,000.

James Reid, of Sydney, C.B., has been awarded the contract for building the addition to the Mount Allison Ladies' College, at Sackville. The new building will be of stone, and will cost about $40,000.

The Victoria School Board have decided to purchase a site for another school in the east end of the city. Separate tenders are being called for the Moss Street school.

Tenders addressed to N. Tessier, secretary, Department of Public Works, Ottawa, will be received until July 5, for electric light wiring and fittings for the Fort William post office building.

A two-storey building of stone and brick will be erected on the Kingston Collegiate grounds, for gymnasium and manual training purposes, at a cost of $6,128.

Extensive alterations are being made to the upper floor of the Victoria city hall for the purpose of giving larger accommodation to the city engineer's department. The alterations will cost about $4,000.

Within the next few days work will commence on the erection of a private hotel at Victoria. The building will be of three storeys and cost about $10,000. The hotel will be furnished in an up-to-date manner, all the latest improvements in heating and plumbing to be installed.

The calling for tenders for the proposed new Rideau Ward fire station was authorized by the Ottawa Board of Control. The estimated cost is $10,000. The building will be up to date in every way, and the specifications will call for tenders on both hot water and steam heating.

A permit was granted for a $10,000 Sunday school which the congregation of St. Paul's Presbyterian Church, Toronto, will erect, adjoining the church.

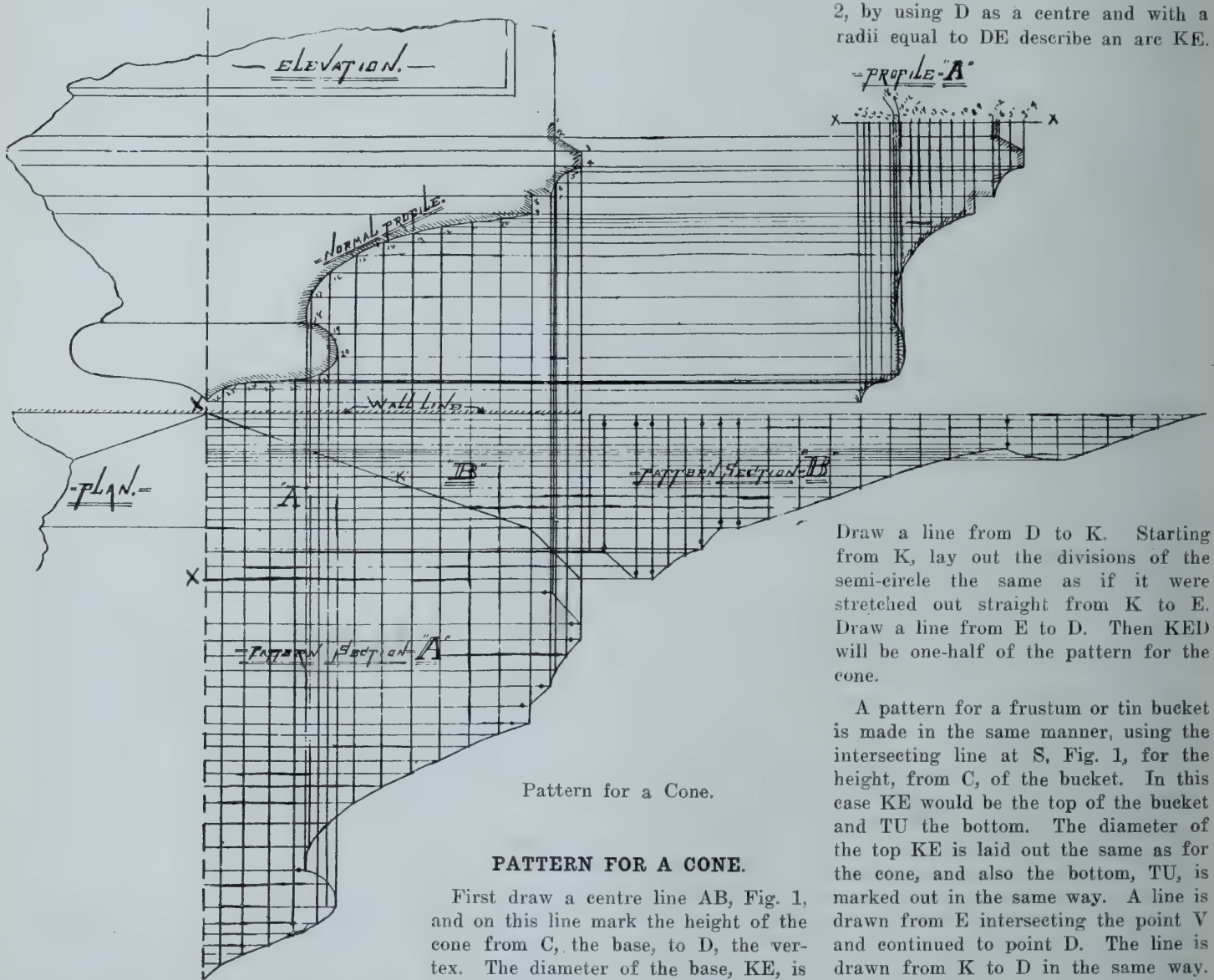
The contract for the construction of the new Presbyterian Church at Burnside, Man., has been awarded to Bedman & Oburn, of Portage la Prairie, at $2,397.

Cutting Patterns in the Tin Shop

Readers of Plumber and Steamfitter are Requested to Make Use of this Department—Questions Regarding Patterns Will be Answered by Experts—Discussion is Also Invited on Any Matter pertaining to the Tin Shop.

SQUARE BAY WINDOW BASE.

This method can be applied to any size or shape providing same is similar in plan. In this case we have the normal profile in the elevation which is also the true profile in section "B"; divide the normal profile in any number of parts and draw same down through section "B" to mitre line from these points of intersection, draw parallel lines through section "A." Next project the points in normal profile to



Pattern for a Cone.

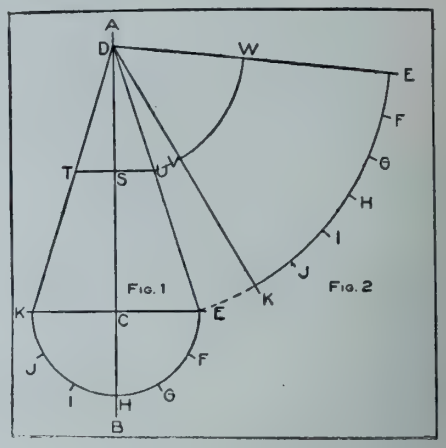
right as shown, take the points of intersection on line XX in plan and place same parallel to the aforesaid projected lines as shown; from these points draw lines down until they intersect corresponding lines making the true profile for section "A"; take the stretchout of profile "A" and place same with parallel line under section "A" as shown, drop the points of intersection in mitre line K in plan down until they interesect corresponding lines in stretchout and this will give the pattern for section "A." Do the same with stretchout of normal profile by placing same opposite to section "B," obtaining pattern for "B."

G. L. GRAY.

PATTERN FOR A CONE.

First draw a centre line AB, Fig. 1, and on this line mark the height of the cone from C, the base, to D, the vertex. The diameter of the base, KE, is marked out with equal radii from the interesecting lines at C. Draw a line from E to D and from K to D, A semi-circle, EHK, is described with C as a centre and CE or CK as radius. This semi-circle is divided into equal parts as shown and represents one-half of the base.

The pattern is made as shown in Fig.



Square Bay Window Base.

2, by using D as a centre and with a radii equal to DE describe an arc KE. Draw a line from D to K. Starting from K, lay out the divisions of the semi-circle the same as if it were stretched out straight from K to E. Draw a line from E to D. Then KED will be one-half of the pattern for the cone.

A pattern for a frustum or tin bucket is made in the same manner, using the intersecting line at S, Fig. 1, for the height, from C, of the bucket. In this case KE would be the top of the bucket and TU the bottom. The diameter of the top KE is laid out the same as for the cone, and also the bottom, TU, is marked out in the same way. A line is drawn from E intersecting the point V and continued to point D. The line is drawn from K to D in the same way. In this case two arcs are described, KE and VW, Fig. 2. The semi-circle is drawn and the divisions are marked out as before and a half-pattern, KE VW, is obtained for a bucket.—Popular Mechanics.

PLUMBING AND HEATING MARKETS

MONTREAL.

July 31.—There is an extremely bright tone to the markets. Jobber's report a very active demand in all lines, and already shortages have appeared in iron pipe and soil pipe. As trade is expected to develop much more strongly during August and September, the difficulty of obtaining delivery in these lines will be very much greater later on unless the plants can overtake the scarcity, which may not be possible. Users who have provided for future requirements can therefore feel very satisfied with themselves.

Reports from all districts show a strong building movement, which seems likely to develop into a boom in the fall. Architects are extremely busy and contractors and plumbers generally have now plenty of work on hand. In these circumstances there is naturally a very optimistic tone all the way round.

There is no change in prices except in the case of steam fittings which are now 65 off instead of 70. This is the agreed discount among the manufacturers. Since the agreement among the radiator and boiler concerns the market has been much more staple, and satisfactory.

SOIL PIPE—Owing to the very heavy demand a scarcity has appeared in soil pipe, and if the call increases as it is expected to do during August and September, users who have not provided for such contingency will be hard pressed for material. Heavy orders are going out in all directions and the market is consequently firm in tone and very brisk. We continue to quote: Light, 3 to 6 in., 60 off; medium to heavy, 2 to 6 in., 70 off; 8 in., heavy, 40 off.

LEAD PIPE—As in other lines there is a good call for lead pipe. Supplies are in better shape than in iron or soil pipe, but it would be well for users to look ahead and provide against any prospect of being held up during the rush in September. There are no changes in pries, and we quote: Pipe and waste at 27½ off; traps and bends at 50; calking lead at 5c per pound.

SOLDER—The demand is good especially from roofers who are not very busy. The market is firm, and we continue to quote 19½c for half and half and 18½c for wiping.

IRON PIPE—There is a growing scarcity of iron pipe on the market owing to the heavy demand which has existed for some time. There seems no shortage in raw material, and it is simply a question of the demand overtaking the supply. The market is firmer than it was, and the shading in prices has disappeared. We continue to quote: ¾-in. to 4-in., black, 72½ off; galvanized, 62½ off.

RADIATORS AND BOILERS—An active call for radiators and boilers has developed with the forward state of building operations, and immediate delivery orders are now heavy. The market is bright in tone, and the agreement in price seems to have cleared the air a lot. We continue to quote 50 and 10 off. A discount of 65 on steamfittings has been fixed by the makers instead of 70.

BRASS GOODS—A better demand exists for brass goods, but the improvement is not so good as in other lines. We continue to quote: Compression work, high grade 60 and 10 off; standard, 70; fuller 75 off.

METALS—There is very little change in the metal markets, and the situation is without character. We quote: Ingot copper, 14¼c; ingot tin, 32½c; lead, $3.55; pig iron, Middlesboro No. 3, $16.50 to $16.75; Summerlee, $18.75. Heavy scrap red brass is 10c; light copper 10c; heavy lead, 2¾c.

TORONTO.

July 31.—Almost every plumbing line is booming just now. Demand is very great for some enamelware lines, and galvanized pipe, particularly in the smaller sizes, is scarce. There appears to be during the rush season every year a scarcity of pipe, and the present season is no exception. Toronto building is taking large quantities of supplies, and the larger towns, too, are active in demand. The country trade is a little quiet, though an interesting feature of rural life in this country is the number of farm and country houses which have installed water services and steam-heating systems.

Prices are much the same as usual. In general there is no change. Black and galvanized pipe are easier, due to the cutting being done by some houses meeting competition from U. S. manufacturers. The half-inch size of galvanized pipe is firmer, because it is scarce. Heating lines are firmer.

ENAMELWARE—A particularly good demand is made for baths and lavatories by the Toronto trade, jobbers reporting splendid business in these two lines, and also much activity in laundry tubs and sinks. Better grades of goods, too, are asked for. Prices are firm just now because of this demand. The country is taking little, but the larger towns of the province are buying well.

BRASS GOODS—No prices changes have yet been announced. Trade is steady and increasing slightly. Both compression and fuller work are active.

IRON PIPE AND FITTINGS—There is a dearth of stock in some of the smaller sizes of galvanized pipe, particularly the half-inch, for which demand is very great. The stocks that have been sent in from the U.S. at cutting prices have prevented any firmness to the maket, but it speaks well for the state of the plumbing business when even big importations of foreign pipe in adtion to our own are unable to supply sufficient pipe for the demand that is made for it. The basic price of $4.54 for 1-inch black and $6.19 for 1-inch galvanized yet holds good, although some houses are cutting 5 per cent. off these prices, and practically every house is giving the 5 per cent. for large quantities. Malleable fittings are unchanged at 40 per cent., but cast iron fittings have advanced from 70 to 65 per cent.

BOILERS AND RADIATORS—Heating lines are going with a swing, end especially is steamfitting active just now. Prices while they have not made any further advance are firmer than at the beginning of July. Steam boilers are 60 and 10; and hot water boilers are 50 and 10. Wall radiators are 50 and 10, as also are hot water radiators. Steam radiators are 50, 10 and 2½ per cent., with angles and curves 25 per cent.

LEAD PIPE—Lead lines are much freer than for some little time past, but supplies are plentiful. Prices are unchanged. Pipe and waste are 27½ per cent.; traps and bends, 50 per cent.; and calking lead, 4½ cents a pound.

SOLDER—Wiping, 18½ cents, and half-and-half, 19 cents are still the market quotations. Trading is splendid just at present, but there is sufficient supply for all demands.

KITCHEN VENTILATING SYSTEMS.

The Cleveland Inspection Bureau has issued the following, dealing with the requirements for construction and installation of ventilating systems, and setting of ranges for hotels, club houses, and restaurant kitchens :—

"The number of fires in hotels, club houses and restaurants, due to poorly constructed kitchen ventilating systems and defective setting of cooking ranges, has caused this bureau to make some little investigation during the past year. We believe we are assured in stating that at least three-fourths of the ventilating systems in kitchens of hotels, restaurants and large club houses throughout the country are defective, and have at one time or other suffered by fire. Our investigation shows these defects to exist almost generally, and are of such an alarming nature as to warrant us, we believe, in

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inviting our subscribers' especial attention to the subject. The requirements enclosed herewith have been drawn up after a most careful investigation, and will hereafter be insisted upon in this city, even to the point of requiring immediate changes in many existing risks. The hazards connected with these ventilating systems in particular, are numerous, and features to be considered are as follows :—

"The ducts should be constructed of proper gauge metal so substantially built that they may burn out without damage to the building or building's contents. (The only manner in which to remove the grease and gum is to permit the ducts to burn out.)

"A ventilating system of this nature should in no manner have connection with other house ventilating systems (as is often found). It is important that this be a separate system.

"Ducts should not be constructed to stacks, chimneys, or flues used for other purposes.

"The ducts must be large enough to promptly and adequately take care of vapors and fumes, this to be governed by area of kitchen and change of air required therein per minute.

"The range hood and shields should be properly constructed, and should be large enough to collect all greasy vapors.

"Fans and power apparatus, in connection with the system, should be located in an absolutely fire-proof enclosure and have proper outside ventilation.

"The setting of ranges is also very important, and is covered by the accompanying requirements.

"These defects are so common everywhere that we believe, the general hazard is worthy of especial attention and a general improvement. These systems will all eventually burn out, and where defective, as they nearly all are, damage to the building and contents generally results."

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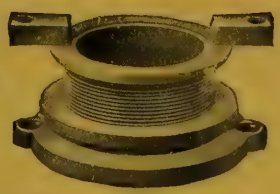

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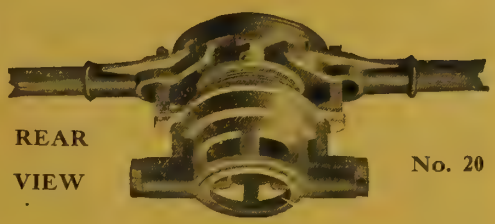

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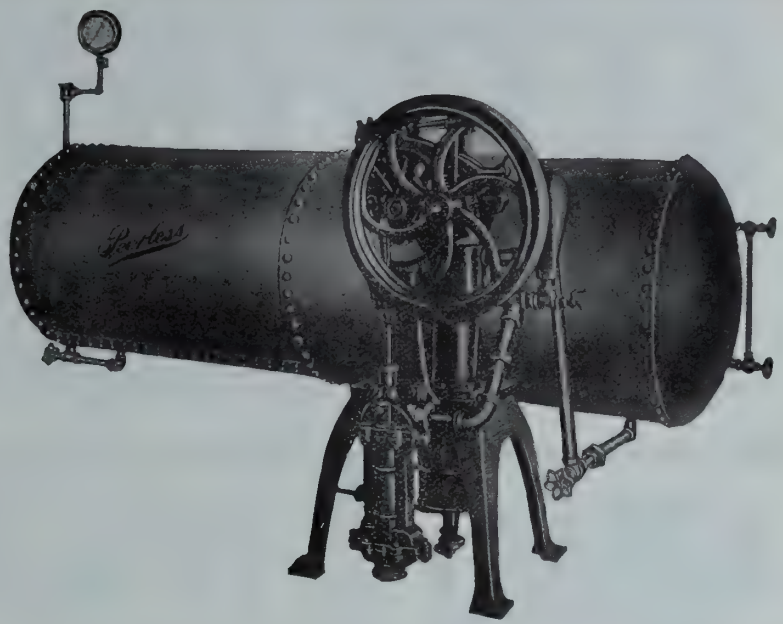

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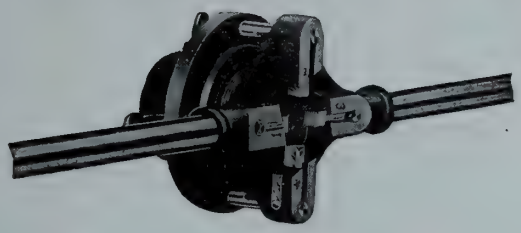

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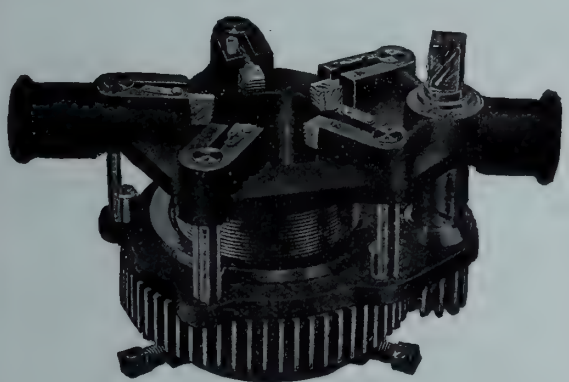

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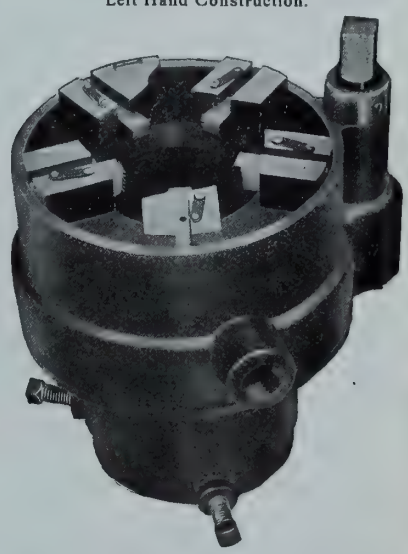

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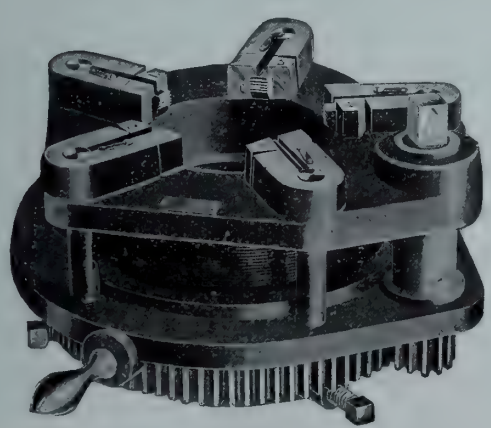

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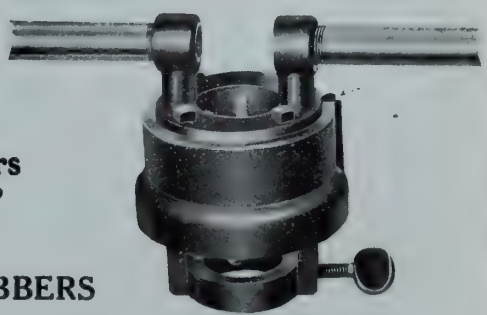

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, AUGUST 16, 1909

COPIES OF LAST ISSUE WANTED.

Readers who can spare a copy of the August 1 issue of The Plumber and Steamfitter are requested to forward it to Noble & Rich, London, who write as follows.

> "Kindly mail us 24 copies of the late number of Plumber and Steamfitter and also the invoice of same.
>
> "We beg to convey to you our most hearty thanks and appreciation of the picnic write up and the cuts appearing in this number. It passed our expectations and we feel deeply indebted to you and trust that this will be only the nucleus of more outings similar but on a larger and more progressive scale."

Owing to there having been an exceptional demand for copies of the August 1 issue the publishers are unable to supply any.

The Plumber and Steamfitter is grateful for the opportunity given of attending the Master Plumbers' picnic at London and in being able to assist in the movement to bring the trade together for social enjoyment and trade betterment.

THE CANADIAN NATIONAL CONVENTION.

One month hence, on Sept. 15 and 16, the fourteenth annual convention of the National Association of Master Plumbers, Steam, Gas and Hot Water Fitters will be held at Montreal, this being the third year the gathering has been held in the Royal City.

In 1907 a lively convention was held and the supply men co-operated with the master plumbers in making the convention a rousing affair. Last year, however, it was deemed advisable to merely call an executive meeting and the attendance, in consequence, was small. For 1909, Montreal has again extended its hospitality and from all reports of the preparations being made to entertain visitors during the "Back to Montreal" week, this year's convention ought to be both largely attended and a success from both educational and social standpoints.

Low railway fares will be available from all points in Canada to Montreal the week of Sept. 13, and every plumber and fitter who can spare the time should take advantage of this opportunity to visit Canada's commercial metropolis during its birthday celebration.

Commenting upon the coming convention at Montreal, the Plumbers' Trade Journal, New York, says:

> Would it not be a very thoughtful act on the part of the National Association of Master Plumbers of this country to send a representative of the organization to the convention as a visitor, even if not in an official capacity? It will be recalled that for a number of years a committee from our friends in Canada showed the friendly spirit of their organization by being present at our national gatherings, while at Detroit two members of the Canadian national association, in the persons of Messrs. Higginbottom and Cameron came all the way from Fort William. Ontario. The Canadian association has closely followed the lines of operation so successfully laid down by the National Association of Master Plumbers in the United States and we feel assured would welcome any representative of our trade who might be present at their annual convention during the cool fall days.

The suggestion is very timely. The association movement in Canada received a severe set back a couple of years ago and now that there are distinct signs of getting together again a few words of advice and encouragement from the more experienced brothers across the line ought to be very helpful and most certainly would be appreciated.

National Secretary Munday and the executive committee will be announcing the program for next month's convention very shortly and it is hoped that one of the attractions will be the attendance of one or two visitors representing the U.S. National Association.

MUST PROGRESS OR STAND STILL

Valuable advice to plumbers is given in an article in the June number of Modern Sanitation, the monthly publication of the Standard Sanitary Mfg. Company, Pittsburgh, treating of the advancement in the professions during the last 10 years, and is as follows:

"Books on the profession when read will increase your theoretical knowledge. Your trade papers should always

be read in order to hear of the newest and best methods and appliances. Study the successful in other lines and see if their methods will not apply to your own profession. Observe the work of others, avoid their mistakes, profit by their good works. It depends on you whether you stand still in your profession or whether you are found in the vanguard. It depends on the plumber himself as to the measure of his success, but with study and observation, combined with a genuine love for his work, none need feel doubtful of his future."

INFLUENCE OF ASSOCIATIONS ON TRADE BETTERMENT.

One of the most interesting addresses delivered at the recent Master Plumbers' convention at Detroit was that given by James J. Wade in which he reviewed the benefits derived by the trade and public in the improvement of sanitary conditions resulting from the work of the Master Plumbers Association. Prior to 1883, Mr. Wade said, the sewer systems were imperfect, and the plumbing and sewerage in dwellings and other buildings were so defective that diseases produced by death-dealing gases and other filthy conditions produced by these defects raised the death rate to an alarming degree.

"Since the time of our organization in 1883" continued Mr. Wade, "these conditions have been completely changed by boards of health in the municipalities throughout the length and breadth of this great country, enforcing ordinances self-guarding the homes from imperfect sewerage and imperfect plumbing. These ordinances were urged upon the municipalities by the plumbers of this organization, and strong efforts have been made by the same body of men to carry these safeguards into the little village, hamlet and especially summer resorts under the supervision of the State. Untiring in these efforts for over a quarter of a century, achieving results far greater than the average man can conceive in preventing disease and by the more healthful environment created in the home, giving to the world in the rising generation a better, a hardier and a more intelligent race, these changes and these blessings enjoyed by 80,000,000 of people the plumbers of this organization are responsible for, and deserve and should have the thanks of these millions of people, and there is a good working percentage, thank God, that does thank us. Not only have the master plumbrs shown their intelligence in advocating and enforcing these changes, but have also shown their knowledge by keeping pace with modern construction. The plumber of 25 years ago was not the plumber of to-day, and he who stood still in our ranks then remained in the ranks but a short time. Progress drove him out and put him on the shelf, as new conditions absolutely had no use for him. And still the plumber of a quarter of a century ago, with less knowledge of sanitary requirements, received in those days a much greater reward than the plumber of the present day, whose knowledge, experience and ability are far greater because of the complications brought to him in his work by modern construction.

The Association and the Plumber.

"There, of course, is a reason why the plumber of to-day does not reap the reward the plumber of 25 years ago received, and I will tell you, and believe you will agree with me; it is such an easy matter to go into the plumbing business, and you and I know how easy it is to get a license. All that is required is to obtain a license, which is got by the good, bad and indifferent would-be master plumber, and then the competition begins. The man of good character who has mastered the knowledge of sanitary science by years of apprenticeship and conscientious work is a valuable acquisition to the ranks of our association. The next step is to join our organization to get a good standing. The man of good character is entitled to it and the members of the association are glad to extend it to him, but why should the bad and indifferent would-be master plumber be welcomed to our ranks, when you and I know the only thing he will bring to us is trouble in many ways? He should not be allowed to affiliate with us because he is a menace to the trade and an injury to the good name of the association, and an unfair competitor. When he injures us in reputation and loss of work, which he obtains by trickery, he injures thousands of people through his bad work when he oftentimes makes the dwellings reek with poisoned atmosphere so subtle and at the same time so certain to produce disease and death, without the slightest suspicion on the part of the occupant how and where the blow came from, and which in other days was laid to Providence.

"It may be said that this statement that I make will not hold water because sanitary ordinances of municipalities protect the home from bad plumbing and its dire consequences. So they do to a very great extent, but we all know that these ordinances are violated every day somewhere by reckless and irresponsible men who take chances against detection by bureaus of plumbing inspection, but for whose diligence and watchfulness the fraudulent plumber would to-day snap his fingers at all ordinances in existence. The unfair competition brought about by these indifferent and reckless men has had a great deal to do—greater than we realize at first thought—with the present conditions lessening the reward of the plumber of to-day to a much greater extent than what it should be or what the reward was of the plumber of a quarter of a century ago.

A Commissioner for the Association.

"How can our association be protected against these unfavorable conditions? Since the organization was formed in 1883, the men at its head have guided its course, which oftentimes has been anything but smooth sailing, with ability and courage. They have given their best efforts and time in making the association a success and respected from one end of the country to the other, and have never wavered when called upon to do more even than their duty to prevent influences endangering its welfare. The officers should not be compelled to do the work of the association; they should guide and guard its welfare as in the past, and appoint a commissioner whose duty should be to apportion in sections this country for the purpose of safeguarding the plumbing and drainage and other important interests which will be for the welfare of the homes of the people in each respective section. It is too much to expect the commissioner in each section to give all his time without compensation. He must be paid for his services, which are given for benefiting each and every member of the association in his section, and the assessment on each member would be so small that not one protest, I am sure, will be heard.

"Plumbing and house drainage is recognized to-day a sanitary science which is preventing disease and improving the physical and moral welfare of the community. During the period of the last 25 years no influence has been so potent, no power so great in this country to bring about the development and improvements of sanitary conditions as that exerted by the National Association of Master Plumbers of the United States; the members individually have done yeoman's work and will continue so in their conscientious efforts to promote the physical welfare of the people of their locality.

Accounting System for a Modern Plumbing Business

A Practical Article, Illustrated by Sample Forms, Written by George M. Wabnitz, and Reprinted From The Bookkeeper.

Is there anything in the home that causes the average householder so much inconvenience, annoyance and expense as plumbing out of order? The water pipes freeze, and the ire of the household's head is aroused, and he or his hired man hastens to apply the heat of a lamp to the supposedly affected parts. There is a pop, and the water gushes forth and inundates the floors. With much noise and excitement the householder rushes to the basement where the main stop cock is located and frantic attempts are made to turn its handle, but it refuses to be moved. It has rusted, through neglect, and the nearest plumber is hastily summoned by 'phone and urged to come on the double quick. He comes, he sees, and he conquers.

Then follows a seemingly endless wait—he has other jobs started which cannot be kept waiting—and unwashed and impatient, the entire household is thrown into temporary chaos; for once, everybody is painfully aware of the importance of the plumber and his plumbing, said painfulness being still more accentuated when the bill for the job comes in. Then the plumber is a "robber," a "rascal," and what not; the good he did not long before has been forgotten. Even when the bill is truly reasonable for the work done, has it not been handed from father to son that the plumber is only a necessary evil—a dirty, grinning lune into whose clutches we must all fall at intervals?

Perhaps no business has been subjected to so many radical changes in the past few years as the plumbing business—that is, as regards the manner of conducting it. Twenty years ago, when modern plumbing was in its infancy, wages and prices were extraordinarily high and competition a thing unknown. Plumbers could not keep up with the demand and little or nothing was known by the general public of the value of plumbing, plumbing fixtures, or appliances. Then came the inevitable "overproduction" with fierce competition and the cutting of prices. The Journeyman Plumbers' Union and the Masters' Associations found that some of the more enterprising of the journeymen had become masters and were of a type above the ordinary, ignorant workman, and by applying business sense and business methods to their trade, were causing many of the older masters to retire or suspend under various pretexts. As I write, the name of three men in my city flash through my mind, who were enjoying prosperous businesses when I was a boy and whose signs and advertisements used to hold my attention, but none of them was able to hold out or to adapt himself to the new conditions, while all were pioneers in the business, who could have grown wealthy had they shaken off the slipshod and slovenly methods of their own making and adopted business methods and proper records in the management of their affairs. In their days the charges were gussed at in a lump without reference to the cost, and it is no wonder that the reputation still clings to the plumber that he is an exorbitant charger. All business is done on a much closer margin nowadays, even the plumbing business.

B. A. Conner
1480 So. 1st St.

DATE 3/10/09 BEGAN 1:30
No 465 FINISHED 4:-

2	¾" Galv Nipples 3" long	07	20
2	¾" " Caps	05	15
2	¾ " Unions	20	60
2	¾ Union Washers	10	15
1	½" Fuller Ball	05	10
1	½ " Pat Met Washer	07	15
1	½" Eccentric	20	40
	Repair leaks in hot & cold supplies at Sink. Repair Fuller Bibbs		
	Time 2½ hrs.	1 15	2 00
			3 65

PLUMBER Brill
FORM 1

In my five years' experience in the office of one of the largest plumbing concerns of a large city, I found that system is a great saver of cost and profits, and, rightly applied, brought satisfaction to all concerned. The prize definition of "system," I believe, is "to know what your business is doing; how it is being done and who is doing it."

It is not necessary, however, to install an unwieldy, complicated system of keeping records of the business and the operations of the workmen, and the suggestions that I make are easily followed by any man of ordinary intelligence, even though his knowledge of bookkeeping be very limited. To succeed, the proprietor of every business must either understand some bookkeeping or hire some one who does.

There are but six books necessary and the forms to be used as few—a Cash Book, Journal, Ledger, Estimate Book, Invoice Book and a Time Book. If, as is the case in a good many of the modern shops, a specialty is also made of gas or electric lighting, or both, or fitters, a column should be provided in the Journal for each, if this is considered desirable by the proprietor and he has a bookkeeper to look properly after the accounts and the entries. This idea would have to be carried out, or course, through the Ledger and the Time book, but generally it is sufficient to have columns only for the contract and the jobbing work, and to enter the contracts and the jobs under their respective heads in the Journal.

The first thing to have, however, is a combination order and work form. The size of this should be four and one-half inches wide by eight and one-half inches long, which, when slipped into an aluminum holder, fits the hip pocket of the workman. On one side have lines for the name and address of the customer, date, number of order, and a line for "when to be done" and the balance of the page ruled off with lines for remarks and instructions to the workman—on the reverse side, lines for the name and address, date, "begun" and "finished." (See Form 1.) The workman is required to list the items of material used on the job and to describe as fully as he can the nature of the work that he did. This is something to which too little attention is paid by most of the master plumbers, but it is very important that on the bill the work done be stated as explicitly as possible so that the owner of the property can see for himself what he is being charged for. Thus. to say on the bill merely "Repairing plumbing" means nothing, when the owner was under the impression that only a leaking pipe had to be fixed, but when in reality a joint at the bottom of the boiler leaked and it was necessary to take down the said boiler and clean it out before the leak could be properly repaired. The more explicitly the work done is specified, the less trouble the plumber will have in collecting his bill. The columns on this slip are to be filled out by the proprietor or the bookkeeper, the first being for the cost of each item, and the second the price to be charged the customer. Al-

though the cost of the material on many repair jobs is insignificant, it is necessary that a good profit be added, as there is considerable loss because fittings and other repair parts are lost, or spoiled while being screwed up.

Now, if to save time and work the plumber does not wish to journalize these charges, this form, when returned by the plumber and properly made out and the charges made, can be inserted in a binder and the accounts posted therefrom direct, the footings of each charge being carried forward and posted in a lump at the end of the month. All the slips can then be removed from the binder, fastened together, and laid away for reference should the occasion require it, which is very seldom in the plumbing business. Of course, the slips for the job and contract work will have to be kept separated if separate accounts of the two items are kept. If a workman has started on a job and he finds that he can do only a certain thing for the present, as when a water box in a range has burst and a new water box must be secured, he makes temporary connections and notes at the bottom of his slip "unfinished," with such remarks as may be necessary to advise the office when the work is to be completed. It is held under the "unfinished work" clamp and another slip issued when the workman again goes on the job to finish it. The second slip when given out must be marked at the head "finis" to call the attention of the bookkeeper, when it comes back to the fact that there is another charge to be considered, in order to prevent the previous charge from being overlooked.

PLUMBER J H Miller. June 1905

	Job	CONT	Shop	Spec	Total	Plumb Wage	Helper Wage	Total	PRICE	REMARKS
1	4	5	1	-	10	4 00	1 00	5 00	6 80	
2	5	5	-	-	10	4 00	1 00	5 00	6 90	
3	4	-	-	-	4	2 00	1 00	3 00	3 00	Off ½ Day
4	8	-	1	-	9	4 00	1 00	5 00	6 00	
5	7	-	2	-	9	4 00	50	4 50	6 50	Took Back for Helper
6	10	-	-	-	10	4 00	50	4 50	7 50	
7										
8	10	-	-	1	11	4 00	1 00	5 00	8 25	
9	9	-	-	-	9	4 00	1 00	5 00	6 75	
10	9	-	-	-	9	4 00	1 00	5 00	6 75	
11	6	-	3	-	9	4 00	1 00	5 00	6 90	Made Elpendants for Jackson Job
12										
13										
14										
15										
16										
17										
24	9	-	-	1	10	4 00	1 00	5 00	7 50	Made 1 hr on agreed job
25	6	-	-	-	6	2 00	—	2 00	4 50	Off ½ day Helper off
26	4	-	-	-	4	2 00	1 00	3 00	3 00	
27	-	8	-	-	8	4 00	1 00	5 00	5 75	Jackson job
28	-	8	-		8	4 00	1 00	5 00	5 75	
29	-	8			8	4 00	1 00	5 00	5 75	
30										
31	-	-				-	-	-	-	Off all day

FORM 2

The slips, both the original and the pink duplicate, are kept under a clamp and when the order is given to the plumber, the pink one is put under a separate clamp, after the workman's name has been written on it, as well as the time it was given to him. A number of these orders are given to each workman when he starts out in the morning, and he is required to call up the office after each job is completed, as frequently small jobs come in in the vicinity which he can attend to. He is then given the order over the 'phone which he puts down on one of the order forms, a few of which he must always have with him. By this method the office keeps in close touch with all the workmen and much time can be saved to the shop as well as expense to the customer, besides giving the latter prompt service.

It is desirable and even necessary that the master should know positively each workman's earning capacity and what profits he realizes on each man's labor during a given period. Nearly everywhere, except in the smaller towns, the plumber works only eight hours. A good mechanic can easily do nine hours' worth of work in the eight working hours and an extra good one can just as easily earn ten for his employer. There are times, at certain seasons of the year, when the orders do not come in fast enough to keep the regular men in a shop busy constantly, and it is necessary, in order not to lay them off, to have them do different jobs in the shop, such as cutting threads on pipe and nipples. This time is to be considered as lost to the employer and therefore it is necessary to get at least nine hours charged up on every working day's slip for each man. The man is sent out to do a little job where the total time consumed is only three-quarters of an hour, but one hour at least must be charged to the job. In this way the shop time is pretty well equalized during the month. An easy way to keep a record of this is to sort the different workmen's slips at the end of the month and make up a statement as per Form 2. The best way however, is to enter this information daily, as it will only take a few minutes each day and serves its purpose much better, as it shows the boss daily what his men are doing.

Mr A.I. Rath's Residence ARCHITECT S.J. Small

1940 Cherokee Road, City PRICE $405.00 ESTIMATED Mar. 3, 1905

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	MONTH	Tot	COST	ESTIMATE
ROUGHING																																			
Huber																											10			10	10	May	30	13 00	
			10		7													5														June	22	9 90	
Brill				4								5																			10	May	10	2 50	
																																June	9	3 05	35 00
DIGGING																																			
Dorsey					5	5	10	10	10	10		10	10		10	10																"	90	13 50	
Davis						5		10	10			10	10		10	10																"	65	9 75	23 00
GAS																																			
Brill					10	10	5							10	5	5																"	45	2 00	25	18 00
FINISHING																																			
Huber																5	10	10		10	10	10	10	10	10			10				Aug	95	4 2 75		50 00
MATERIAL																																			
4 Std Soil P																											10			25	25	May	60	11 05		11 05
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4 Fittgs																											2			9	7	May	18	5 35		5 35
2 "			5		7																											June	12	2 00		1 50
Steel Loads																		3														"	3	50		50
Pig "																		60														"	60	3 00		3 25
¾ Gas P					30																											"	30	1 80		1 80
½ " "					35	70	40						70	70	75	40																"	330	16 50		16 50
¾ Fittgs "					8																											"	8	1 60		1 60
1 " "					5	6	4							4	3	2		X	1½	Pet Cock	10¢											"	24	2 40		2 40
1-1 Ell Cock	65¢		1½	65¢		4	½	10¢			1½	Std	Mk	40¢																		"		3 80		3 50

FORM 3

The first column is for the days of the months, from one to thirty-one; the second for hours put in on jobbing work, the third, time put in on contract work; the fourth, for noting the hours of "shop time;" the next for noting anything special done and which would not properly come under either of the heads mentioned. The next is the total time the workman put in during the day as shown from his workslips. The column marked "price" is the amount the employer realized on the workman's time as shown from the charges on the workman's daily slips. Sometimes, by the workman having a green helper, he cannot make as good time as ordinarily and this should be noted in the "Remarks" column.

The estimate book is an important one to the master who goes after contract jobs, especially new work. Time was when the master looked over the specifications and the blue prints, and hurriedly made up an estimate in the rough, lumping this and that with the other, and there generally was a good margin in this lumping. Now, the specifications are read carefully over first, and every item of cost in the construction of the work is put down. The blue prints are carefully looked over and the measurements taken, and the exact cost of every item carried out in the right hand column. The total is taken and a certain percentage added as profit. Some times this profit is a very small one, especially if there appears a chance to make any extras because the architect left something out, which is always the case on all large jobs. Frequently the architect will ask the plumber who has the original contract to give a price for additional work or changes in the plans and a good profit will be added to that estimate.

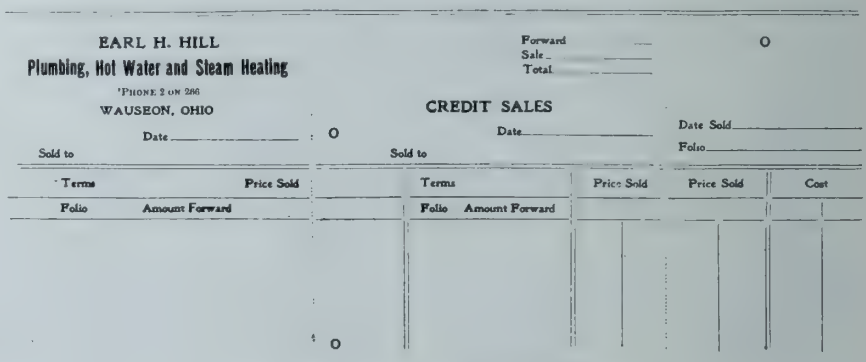
Now, after a job has been awarded and the master starts to work, it is important that a strict account be kept of each item of expense in its execution. The completed records of a number of such jobs come in very handily when figuring on any similar jobs in the future, besides showing exactly what has been made or lost on the contracts. For this purpose see Form 3. The figures from one to thirty-one again represent the days of the month. The roughing being the first thing that is done, this is placed at the head of the sheet on the left hand side. The figure in the square under the date of the 27th indicates that the plumber started on the 27th of the month and the first column on the right hand side of the sheet shows that the month was May. Every day the hours that the workman got in on the job while on the job are placed in the respective squares representing the days of the month and this information is posted direct from the workman's daily slips, or Form 1. After leaving room for the laboring, or digging, gas piping, supplies (water), etc., the list of materials used can be started on the left hand side. The form shown illustrates this system more thoroughly than I can explain it and if properly used will be an interesting thing to the master when the job is completed, the separate items of cost being carried out in the Cost column, and the total compared with the original estimate. As there is no limit to the space, the sheets being in loose leaf form, no matter how large the job may be, it can be easily and accurately recorded until finished.

The workmen are required to be at their work at least ten minutes before starting time, in which time they are to write up their slip for the preceding day's work and to have it ready for the employer or the foreman when he makes his morning round. The latter can easily verify his figures in a few minutes as to the amount of material used, which is important, as I have known a workman to fit up his entire house with plumbing material that he "hooked" from different jobs because the foreman accepted his figures without question. A comparison of the workman's figures with the amount of material left him the previous day will show if his figures are right. In the case above mentioned, it was found when the jobs were completed and the totals taken, that he had charged up six more lengths of 4-inch standard soil pipe than he could possibly have used, and as the most of it was exposed, it was an easy matter to recheck with him, and he admitted that he had made mistakes, after which the foreman found it to his own interest as well as that of his employer to check this man's slip carefully each morning.

One of the vexing problems of the business is how to take care of the thousand and one little repair parts, and in such a manner that when any one of them is needed it can be found without losing valuable time hunting for something that is not there after rooting through drawers and boxes containing sundry parts. It is frequently much cheaper, if the shop be located near the supply house, to get half a dozen eccentrics for Fuller faucets for a job, than to try to find one in stock. A cabinet which has many large, medium and small drawers labeled in alphabetical order, is a great help.

SIMPLE BOOKKEEPING FOR PLUMBERS.

A neat, convient and simple system of bookkeeping has been devised by Earl H. Hill, Wauseon, Ohio, for his plumbing business, and consists of blanks from which the accompanying illustration from the Metal Worker is reproduced. The first sheet at the left, which contains his business address, is used for a bill to be sent to the customer and is joined onto the main sheet with perforations, so that it can be readily torn loose. The main sheet is made in three parts, one of the same size as the bill sheet, which is 6½ in. wide and 8¼ in. deep, and at the right edge of this sheet, which is retained as a record of the transaction, is another small slip 2 in. wide, on which the selling price and cost may be recorded, as well as the date of sale and the folio to which it has been transferred in the ledger. Both of these sheets are perforated with larger holes at the points shown by O, so that they can be readily kept on file. The sheet at the left is printed on the reverse side of the main sheet, so that it may fold over and then with the use of a sheet of carbon paper the bill and the charge may be made at the same time. Then the bill may be forwarded to the customer and the charge slip placed on file for reference, and the stub can also be filed where it will give a record of the business.


EARL H. HILL
Plumbing, Hot Water and Steam Heating
'PHONE 2 ON 286
WAUSEON, OHIO
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Price Sold
Cost

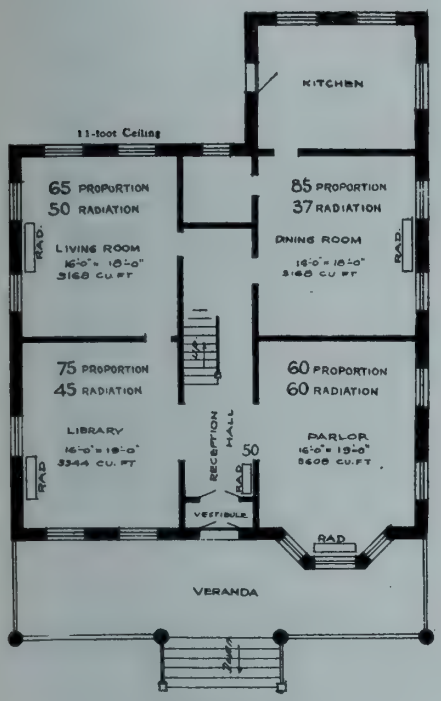
Forms used by an Ohio Master Plumber.

The Asbestos Mfg. Co., has taken over the Canadian Radiator Co.'s buildings at Lachine and will open them as a factory for the manufacture of asbestos, reinforced, corrugated and flat lumber, etc.

The Evolution of Steam Warming

R. T. Crain, Chicago, Describes the Rules Worked Olt and Applied in Warming Private Houses by Direct Radiation.

In a series of articles in The Valve World, R. T. Crane has been giving an account of the various styles of steam-warming apparatus devised by the Crane Co. for the different kinds of buildings and in the one reproduced herewith he takes up the question of rules laid down for constructing the apparatus, giving first the rules used in the warming of



First Floor.

private houses by direct radiation. Mr. Crane says rules were developed for practically every feature connected with all these different styles of apparatus, most of the rules being necessary in order to estimate the cost of the job correctly. Mr. Crane writes:

Heating Surface Required.

"The first point to be considered in going into this subject is the amount of heating surface required and in order that readers may understand how we handled this matter, I have prepared an imaginary plan of a house having the usual variety of exposures.

"In calculating the amount of heating surface required, the proportion of heating surface to the area of the different rooms has to be determined. There is, of course, a wide variation in the proportions required for the different rooms, on account of the great difference in the exposures of the various rooms, as compared with their area.

"Our general rule was that one square foot of heating surface will warm from 60 to 100 cubic feet of air, but people in making estimates will have to use their judgement in arriving at the correct amount.

"We apply the same rule to the chambers that we do to the first floor, but the area of the room being less, the radiation figures out proportionately less, as the diagrams show. Theoretically, in the upper rooms we have approximately the same amount of exposure as for the lower rooms that would require the same amount of surface for warming; but the area is considerably less, and probably the windows are shorter than the windows on the first floor, and in any case sleeping rooms do not require as high a temperature as living rooms.

The Boiler.

"The next thing to be determined is the size of the boiler. The rule for this is: One square foot of grate surface will supply 133 square feet to radiating surface. In the case we are here illustrating, which contains 400 square feet of radiation, we divide this figure by 133, which settles the size of the boiler, which is 3 square feet of grate surface.

"In settling the size of the boiler, there is a chance for some difference of opinion. My opinion is that it is just as well to have the boiler a little close in size, because if it is too large it will, of course, give too much fire in mild weather. If figured close it simply means that it will have to be run rather hard only in the few extremely cold days that we have.

Supply Pipes.

"There are three systems of piping for jobs of this kind, as follows:

"The strictly one-pipe system, in which the condensation returns to the boiler in the same pipe and against the steam.

"A modification of the first system in this respect, that the main pipe falls as it goes away from the boiler, so that the condensed water follows the steam, instead of going against it, and returns to the boiler at the opposite end.

"This feature applies to what might be called the main supply, but the laterals, for the sake of convenience and simplicity, are on the principle shown in system No. 1; that is, the water in that part of the apparatus returns through the same pipe and against the steam.

"The system shown in Diagram No. 3, which is the regular system of separate return from each radiator to a main return pipe located below the water line, is so thoroughly understood that no explanation is necessary.

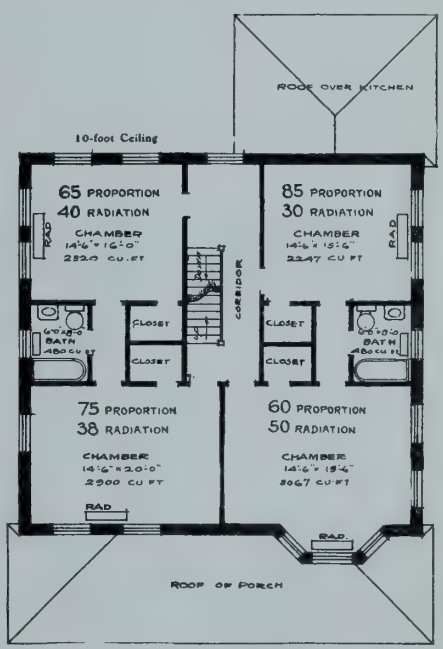
Determining Sizes of Pipe.

"Our rule for determining the size of the pipe for supplying the radiators was as follows:

"In system No. 1, known as the one-pipe system, one square inch of area in the short vertical pipes running through the ceiling of the basement to the first floor will supply fifty square feet of radiation. In the vertical pipes going to the second or third floor, one square inch of area will supply 40 square feet of radiation. The horizontal pipes should be 25 per cent. larger than all the other pipes combined. The pitch of pipes should be 10 per cent. The sizes of pipes required for this job are shown on the diagram.

"In system No. 2, in which the condensation follows the steam, the rule was: With five feet of water line, one square inch of area will supply 135 feet of radiating surface. In the job we have here illustrated, this would require the first section of main pipe to be three square inches, which is a two inch pipe, as shown in the diagram.

"In system No. 3, where we have return pipes, the same area of pipe is required as in system No. 2, for all main supply pipes. In cases where the lateral pipes are of some considerable length, the steamfitter must bear in mind that there is some danger of getting an accumulation of water there, which would



Second Floor.

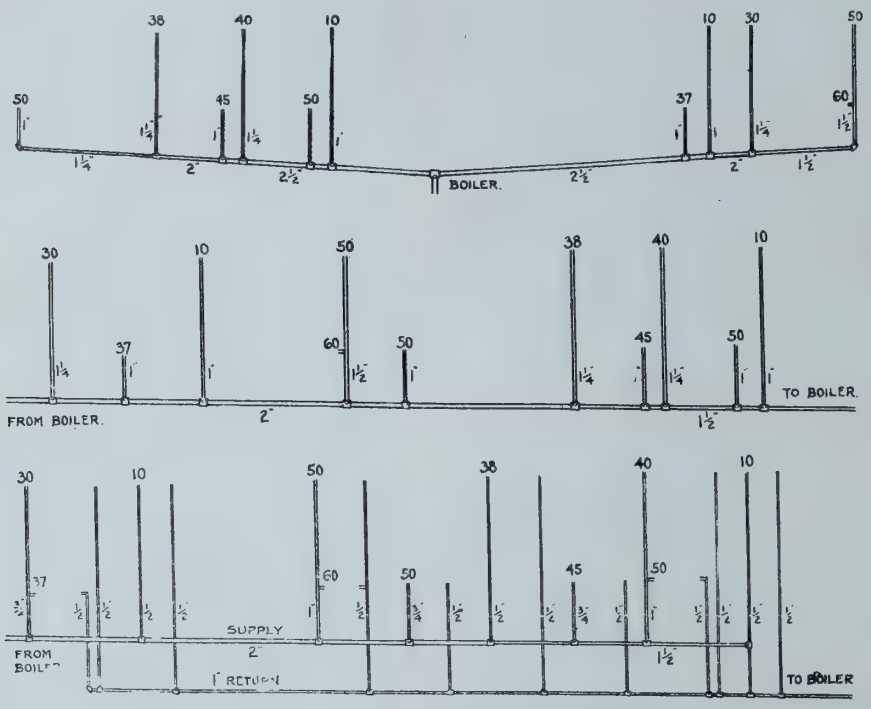
be a nuisance, and for this reason a considerably larger pipe is used in that part of the job, so that the water which condenses in this pipe may return to the main supply.

"All these rules are close to the minimum, and if a steamfitter who is figuring on a job has any doubt in the matter, he should always lean to the liberal side, rather than split hairs, for he will find

that after mistakes have been made in a house it is very expensive to correct them. The above rules are intended for such temperatures as we have in Chicago.

Advantages of Each System.

"Systems Nos. 1 and 2 are practically the same thing, the only difference be-



Three Diagrams Showing Layout and Sizes of Pipe.

ing that No. 2 can be constructed a little more cheaply than No. 1, as smaller main pipe is required.

"No. 3 differs radically from the other two, as it permits of the regulating of the amount of steam for each radiator. This is a matter of considerable importance, or, at least, it would be so in the hands of people who would give it proper attention, for in mild weather the valves would need to be open but slightly and in cooler weather they would be open in proportion to the difference in temperature. I think, however, that in the majority of cases very little discretion would be used in this regard, and that the valves either would be turned on full or entirely closed, so that no benefit would be derived from this feature of the apparatus.

"In this construction the boiler must be so arranged that the pressure of steam can not run above two pounds, so that the water cannot back up into the radiators; and in the case we are illustrating it is assumed that there will be at least five feet of water line, which will admit of two pounds pressure on the boiler without danger of backing up into the radiators. In this case we specify the pipe to be two-inch, which would take care of five feet of water-line.

"This system could not be used advantageously in cases where there was materially less than five feet of water line, as there would be too great a danger of water backing up into the radiators.

"I am not offering anything in this article as new. My purpose simply is to show the state of the art in the early days of steam warming and the part we played in advancing it.

NEW CANADIAN PATENTS.

Below will be found a list of patents issued by the Canadian Patent Office, relating to plumbers and steamfitters, and furnished by Fetherstonhaugh & Co., 5 Elgin St., Ottawa, Canada.

119568. L. T. Kuehl, Chicago. Kerosene burners for melting furnaces and similar uses, Geo. Kuehl.

119588. H. J. Ehrlich, Brazil, Ind., H. B. Ehrlich, Seelyville, Ind. Valves.

119594. G. H. Mascord, London, Eng. Generation and transmission of motor power.

119599. T. Latourelle, Montreal. Hot water heaters.

119601. T. D. Millea, Springfield, Mass. Float valves. 119602. T. D. Millea, Springfield, Mass. Couplings for float valves.

119641. F. W. Marillier, Swindon, Co. of Wilts, Eng., E. H. Still, A. G. Adamson, London, Eng. Incadescent gas burners and mantles.

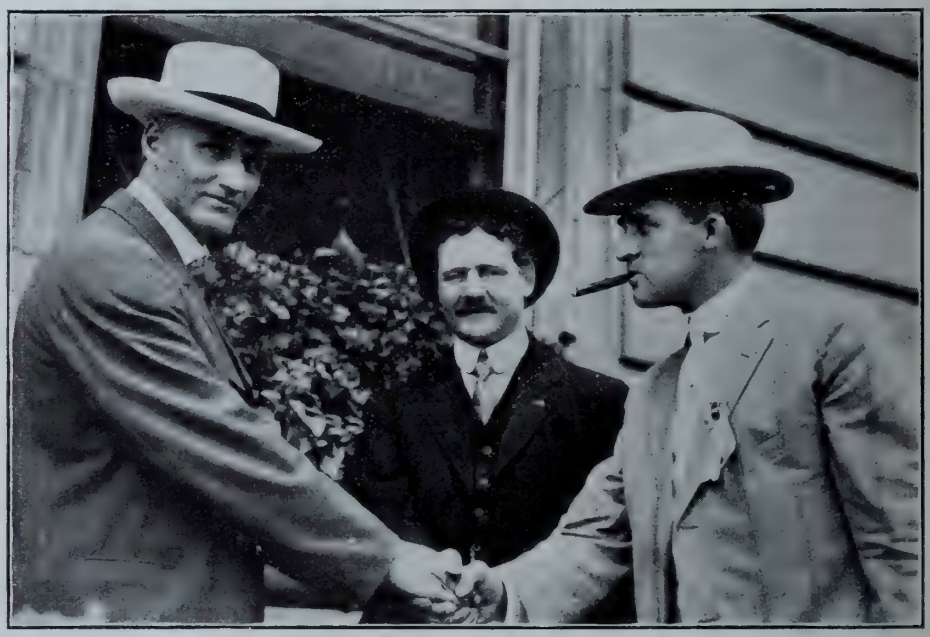
11 9645. R. E. Coob, Oakland, Cal. Current water motors.

119654. W. S. Hamilton, Oakland, Cal. Heaters.

119709. F. L. Sehnert, G. L. McManus, Houston, Texas. Flexible pipe connections, F. L. Sehnert, G. McManus.

119711. F. J. Cox, Kentish Town, London, Eng. Apparatus for production of gas, Non-explosive Gas Co.

The $100,000 that the directors of the Nova Scotia mine at Cobalt have voted is for the purpose of erecting a twenty-stamp mill with an amalgamation and cyaniding process plant.



E. D. Higginbotham (on left) and Charles Cameron (in centre), Fort William, shaking hands with a Texas Delegate at the Detroit Convention of Master Plumbers, From the Plumbers Trade Journal.

The Installation of Bath Room Fixtures

Some Tips Given by Phoenix in Domestic Engineering on Setting Plumbing Fixtures.

It is a comparatively easy matter to throw in the fixtures any old way in a bath room. The question is, however, how long are the fixtures going to hold up?

Several weeks since, the writer was in the toilet room of a certain hotel in the southwest, when suddenly there was a crash and a splash and a tremendous banging in one of the adjoining sections, and a drummer emerged dripping with water and the tank of a closet hanging gracefully upon his left ear. What that drummer said when freed from his encumbrance would not look well in print.

A short time ago the wife of one of the neighbors while washing dinner dishes at the sink, to her horor saw the whole affair, pan, dishes and sink crash to the floor with one grand smash.

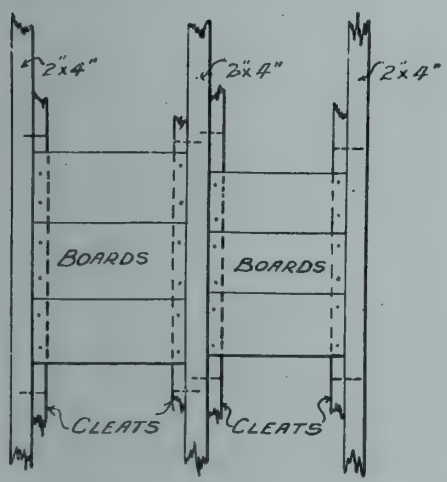


Fig. 1.

Her feelings can be better imagined than described.

In each of the instances given the job was supposed to be all right and at first looked all right, but finally proved a fake and was disgustingly unsatisfactory work of the most rotten type as the fixtures appeared to have been merely stuck in place. Of course the plumber who installed the work had to make it good, but the drummer suffered a severe cut on the head where the tank hit him, and the house wife lost her dishes and each p'umber undoubtedly lost a customer.

Had these fixtures been properly anchored they would have remained in place as long as the building stood.

When "roughing in" on a job in a new house it is a good plan to locate, as nearly as possible, the exact positions of the sink, closet and lavatory and before the lath and plaster are on, to make sufficient and proper preparation for the support of the fixtures to be used on the job.

Fill in, solidly between the two by fours, immediately back of the place where the fixture is to be placed, something after the manner shown in Fig. 1.

Do not merely fill in about the exact space allowed for, but let the backing take in more space, as very frequently the owner changes his mind and selects a different type of fixtures and it is best to be prepared for all emergencies. If the sink is extra length it will be necessary to fill in more than two spaces. A cleat nailed firmly upon the inside of the two by fours and several boards nailed as shown in Fig. 1, the boards coming just a trifle shy of being flush with the face of the two by fours, will be found good practice.

It may be several weeks before the sink, lavatory or closet is placed in position, but when the time comes there will be no tapping the walls to find the solid places in order to make a secure anchorage, for complete and lasting preparation has already been made and the fixture will be firm and hold up as long as the house may stand.

Another source of much trouble and dissatisfaction is the slipshod manner in which closet bowls are secured at the bottom. It would be a safe statement to say that thirty per cent. of the closet bowls in the country can be easi'y rocked from side to side.

This means, in due time a broken bowl, or a condition that will allow the escape of sewer gas.

The most simple and at the same time undoubtedly the most common form of floor connection for the closet is to flange the lead bend upon the floor and fill the groove around the outlet of the bowl with putty.

The bowl is then screwed to the floor, the putty being compressed and forming the joint. The screws are many times put in last and much trouble is then experienced in getting them to hold properly. The floor may be very hard and in trying to send them home the nut may be spoiled. If the attempt is made to put them in with a screw driver, the bowl is found to be in the way, as shown in Fig. 2, and the screw will be driven in crooked, or the head badly torn. A drop of oil on the screw will make it turn in much easier.

It is better to set the bowl in position and take a nail and a light hammer and mark in the wood where each screw will come. Then remove the bowl and drive the screws home to the proper distance and they will all then stand plumb.

The bowl can now be put in position and the heads put on to the screws. They will hold and the bowl will not rock nor the heads fly off from the screws.

This method of securing a bowl is open to the objection that some day the floor may rot or shrink and in such a case gas will undoubtedly escape into the room.

There are much better forms of connection in practice consisting of brass flanges and rubber gaskets. The bases of some bowls are also constructed to

Fig. 2.

receive screw connections. These forms are duly patented and can be found by writing for the catalogues of almost any first class supply house, or by consulting the advertisements of manufacturers.

Many times it is found necessary to set a bowl directly upon a marble, slate or cement floor, and although it is not the best practice in the craft to do so, without gaskets, it can be accomplished and made to hold, even in cement if the cement is of good quality and provided that the holes be bored properly.

Many times these holes are simply bored straight down, and no other precaution taken. In such a case the lead will generally work loose in due time and a loose "wiggly" bowl is the result. Bore the hole in the marble sufficiently large and straight down.

Then take a smaller bit and bore at

Fig. 3.

least two holes from the bottom after the manner shown in Fig. 3, thus forming a good anchorage. Then hold the screw plumb and pour the lead allowing it to cool before calking in firmly. If secured in such a manner the bolt and lead should hold unless the marble chips, or the cement crumbles, in which case the fault would not rest with the plumber. These are simple precautions, easily taken, and it does not cost half as much to do the job correctly at first as it does to have to patch it up later on.

The Norris Elevator Co., Winnipeg, will build five elevators this year on the line of the Alberta Railroad and Irrigation Co.

P. H. Brodesser, the president of the Brodesser Elevator Company of Milwaukee, intends to estab'ish a branch factory in Winnipeg.

The Effect of Painting Radiating Surfaces

A Paper Presented by John R. Allen, Ann Arbor, Mich., at the Semi-Annual Meeting of the American Society of Heating and Ventilating Engineers.

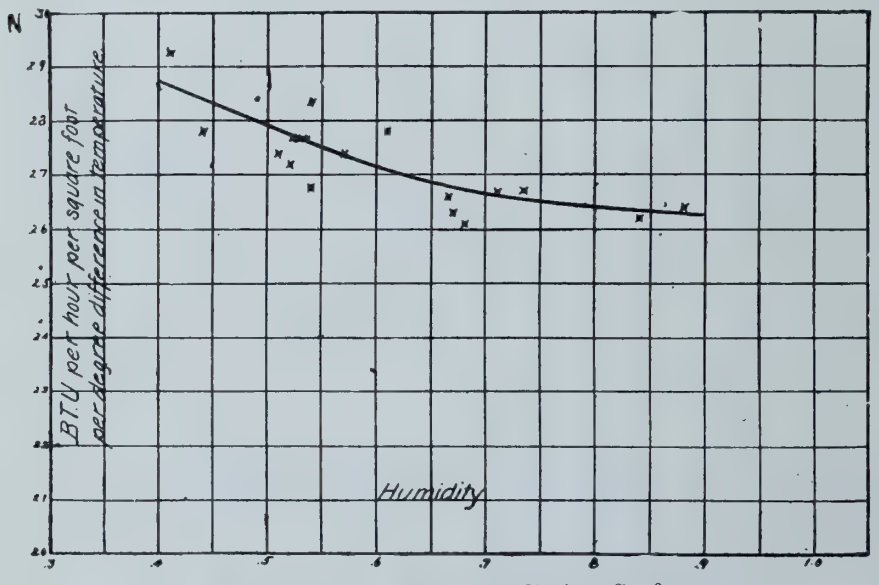
The experiments described in this paper were conducted in the Experimental Laboratory of the University of Michigan. The apparatus used for testing the radiators has been described previously in connection with the discussion of a paper presented before the Society. In conducting the experiments to determine the effect of painting upon the heat transmission through radiators, two flat cast iron boxes were used in place of the radiators.

Description of the Apparatus.

The apparatus used may be desrcibed as follows: The two cast iron boxes were placed near the inside wall of the room in the same relative position to the outside wall surface. On the floor below steam was admitted to a chamber through a reducing pressure valve. From this chamber, with nearly equal lengths of pipe, steam is conducted to the radiating surfaces. This piping is heavily covered with hair felt. Condensation from the two radiating surfaces is conducted to two chambers which are used to accumulate the condensation. These chambers are provided with guage glasses so that the condensation in the chambers may be maintained at a uniform level. The condensation is drawn through valves from these chambers to the cooling coils on the floor below. The condensation after being cooled so as to avoid steaming, is weighed in tubs. Valves below the chambers are set so as to obtain as nearly as possible a uniform discharge of water from the chambers. The usual period of time during which tests are conducted was three hours, and before a test was accepted as correct the condensation for two successive hours was compared and a test was not considered satisfactory if the condensation for two successive hours varied more than 2 per cent.

Methods of Making the Tests.

The method used in determining the effect of painting the radiating surfaces was to leave one radiator unpainted and paint the other. The heat loss from both radiators was determined in each test, and the ratio of the heat loss of the painted to the unpainted radiator was termed the efficiency. During the tests,



The Effect of Painting Radiating Surfaces.

readings were taken of the temperature of the steam entering the radiator, of the temperature of the water leaving the radiator, of the steam pressure, of the temperature of the outside air; the moisture condition was determined by a wet and dry bulb thermometer, and the temperature of the room was taken in three different places. Thermometers subject to radiant heat had their bulbs protected with paper cones so as to avoid error. The actual surface of the radiators used was obtained by careful measurements.

Readings Taken.

The actual surface of radiator No. 1 was 9.99 square feet; of radiator No. 2 the actual surface was 9.9 square feet. The steam pressure maintained throughout the entire test was 4¼ pounds guage. All readings given in the following table of results are corrected readings. Corrections were made for steam gauge and thermometers both before and after the test. The following tables gives the principal results obtained from these tests.

Column 10 of the table headed "efficiency" gives the heat transmission of radiator No. 2 as compared with radiator No. 1, which has been assumed as a standard and was left unpainted during the test. In comparing the effect of the various coats, the efficiency, as given in column 10, has been taken as a basis of comparison. Tests 1 and 2 were made with both radiators unpainted and an average of the results gives a difference in the heat transmission in the two radiators of .1 of 1 per cent., so that they are assumed as having practically the same heat transmission value. Lines Nos. 3 and 4 show the effect of painting radiators with two coats of copper bronze for each test. The results of the test show a reduction in the heat transmitted by the radiator of 24 per cent. On top of these four coats of copper bronze two coats of terra cotta enamel were applied. The result of the additional two coats was an increase of 3.8 per cent. above the transmission effect of the bare radiator or 28.6 per cent. above the transmission effect of the radiator with a copper bronze finish. On top of these coats of terra cotta enamel were applied two coats of copper bronze, the same as was applied previously, and the loss in the conducting capacity was shown to be about 26.5 per cent. This is about the same results as was obtained in the first experiments with copper-bronze.

In order to determine whether this loss in heat transmission was produced by the pigment of the paint or by the vehicle carrying this pigment, test No. 7 was made using only the vehicle which was a light brown varnish. This test shows a loss of 2.8 per cent. as compared with the unpainted radiator. The same was true when a light oak brown varnish was used. This varnish was applied on top of the coats as previously mentioned. The varnish was followed by two coats of aluminum bronze, and the heat transmission was nearly the same as that shown by the copper bronze, namely, a loss of 27 per cent.

The interesting fact is that the trans-

mission of heat was almost the same with 14 coats of paint applied to the radiator as with two coats, and that the effect apparently depended upon the last coat applied and the intermediate coats through which this heat was transmitted had very little effect upon the heat transmission. That is, the heating effect of the radiator was more affected by the condition of the surface than by the material through which the heat was conducted.

Tests 10, 11, 12, 13, 14 and 15 were started with two coats of aluminum bronze. The heat transmission was practically the same as for the aluminum bronze in test No. 9, in which 12 coats of other paints had been applied, showing, as previously stated, that the various coats underneath the last coat made very little difference in the heat transmission. These coats of aluminum bronze were followed by a series of enamels of different colors as stated in table. You will note, as shown in test No. 12, that the snow-white enamel gave the best results. The lowest result was given by "no luster" green. The extreme difference due to color was about 5.4 per cent.

Tests 16 and 17 were made using a different vehicle for carrying the pigment. You will notice in these tests that copper bronze and shellac seem to give better results than copper bronze and linseed oil, so that the vehicle may have some effect in the value of the heat transmission of paints. Tests 18, 19 and 20, made with white lead paints, show that the transmission effect with white lead and oil is practically the same as for unpainted radiators. These white lead paints were followed by coats of zinc paint, as shown in tests 21, 22 and 23. For the light green and white the transmission effect was practically the same as for unpainted radiators. For terra cotta there was a slight reduction in heat transmission.

These tests covered a period of about three months. They seem to show that the poorest coverings are the copper and aluminum bronzes; the best materials tried were the enamels, while white lead paints and zinc paints are only slightly less in transmission effect than a coat of enamel.

Effect of Humidity.

From columns 9 and 11 the curve shown in Fig. 1 has been plotted. This shows, as has been pointed out before in a previous paper, that the rate of transmission of heat varies with the humidity; that the higher the humidity, the lower the rate of transmission, the probable variation through ordinary ranges of humidity being about 10 per cent. in the coefficient of radiation.

Table I.

1	2	3	4	5	6	7	8	9	10	11		
					Radiator No. 1		Radiator No. 2					
No. of Test	Steam Pressure.	Average room temp.	Average temp. of steam entering the radiator.	Difference in temp. between air and steam.	Condensation per hour per sq. ft. actual surface.	B.T.U.'s rad. per hour per sq. ft. of surface per deg. diff. of temp.	Condensation per hour per sq. ft. actual surface.	B.T.U.'s rad. per hour per sq. ft. of surface per deg. diff. in temp.	Efficiency.	Humidity.		Remarks
												Radiator No. 2 Plain in all Tests
1	425	74.4	222	148.6	.413	2.82	.413	2.82	.997	.45	1	Rad. No. 1 Plain as received from factory
2	"	76.0	220	144.0	.418	2.94	.414	2.925	1.005	.408	2	" " " " " "
3	"	63.1	224	156.3	.353	2.16	.438	2.835	.761	.542	3	" " " Painted with Copper Bronze.
4	"	72.3	220	148.7	.325	2.08	.432	2.78	.752	.608	4	" " " " " "
5	"	74.5	220	146.5	.436	2.86	.426	2.78	1.038	.437	5	" " " " " Terra Cotta Enamel
6	"	66.3	218	149.7	.351	2.24	.478	3.05	.735	.482	6	" " " " " Copper Bronze.
7	"	74.1	224	150.9	.421	2.67	.442	2.74	.977	.510	7	" " " " " Light Brown Varnish
8	"	72.9	226	154.0	.431	2.67	.442	2.74	.977	.572	8	" " " " " Oak Brown Varnish.
9	"	71.8	225	154.0	.318	1.97	.436	2.70	.730	.512	9	" " " " " Aluminum Bronze.
10	"	70.5	224	154.4	.324	2.005	.448	2.77	.724	.525	10	" " " " " "
11	"	66.7	223	157.3	.442	2.68	.441	2.77	.970	.530	11	" " " " " Silver Gray Enamel.
12	"	67.6	224	157.4	.452	2.75	.446	2.72	1.01	.520	12	" " " " " Snow-White Enamel.
13	"	64.2	224	160.5	.446	2.66	.448	2.67	.997	.708	13	" " " " " Bronze Green Enamel.
14	"	64.0	224	161.0	.429	2.545	.447	2.67	.956	.735	14	" " " " " No Lustre Green Enamel.
15	"	70.6	224	154.4	.423	2.62	.423	2.63	.997	.670	15	" " " " " Maroon Gloss Japan.
16	"	68.5	224	156.5	.364	2.22	.427	2.61	.850	.680	16	" " " " " Shellac and Copper Bronze Powder.
17	"	67.0	224	158.0	.347	2.02	.469	2.66	.760	.665	17	" " " " " Copper Bronze Powder and Linseed Oil.
18	"	86.9	224	138.1	.379	2.62	.381	2.66	.987	.848	18	" " " " " White Paint.
19	"	83.4	224	140.5	.389	2.65	.386	2.64	1.00	.88	19	" " " " " Terra Cotta Paint.
20	"	86.8	224	138.0	.374	2.59	.378	2.62	.989	.84	20	" " " " " Light Green Paint.
21	"	77.2	224	147.8	.423	2.72	.418	2.72	1.00	.60	21	" " " " " "
22	"	77.7	224	146.3	.408	2.66	.422	2.77	.964	.535	22	" " " " " Terra Cotta Paint Zinc.
23	"	76.0	224	149.0	.418	2.70	.413	2.68	1.01	.540	23	" " " " " White Paint Zinc.

These paints of two coats each were painted over one another in the order given.

This Series follows one another.

Painted over one another.

JUDGMENT DEFERRED.

In the suit entered by the Standard Sanitary Manufacturing Co. against the Standard Ideal Co., in the Ontario courts, oral judgment was recently delivered by Chief Justice Meredith, as follows:

"It seems to me that it is not desirable that the trial should proceed until a decision of the Court of King's Bench in Quebec has been given. If the decision of that court is as the trial judgment is, in favor of the plaintiff, it probably is conclusive in favor of the plaintiffs in this province as establishing the two propositions, as I understnad it, that there is no right to use the word "Standard" in connection with the defendant's manufacture by reason of that word having become identified as descriptive of the character of goods that are made by the plaintiff company, and on the further ground—I have not been told how it was found as to that—that this name was deliberately chosen for the very purpase of taking away from the plaintiffs part of their trade. If both these points, or if either of them is decided in favor of the plaintiffs, it practically means an end of the action here, except a reference to ascertain the damages.

"I think the proper order to make will be to stay the action pending the decision of the Court of King's Bench in the Quebec action, with liberty to the plaintiffs to move to remove the stay if the matter is not disposed of before the 30th November next, or if they are advised that occasion arises which justifies such an application."

CLOSET COMBINATION FOR FACTORIES.

A closet combination for factory use or other places requiring an outfit of exceptional strength and durability is offered under the name Ideal by the Ideal Mfg Company, Windsor and Detroit. It consists of a galvanized cast iron flushing tank, a reinforced strong saddle pattern seat attached to the closet bowl with heavy brass bar hinges and a wash down bowl. Opportunity for quoting prices on this fixture is sought by the company.

Letters from Correspondents on Trade Problems

The Editor Invites Short Letters and Sketches Describing Problems Met With or Original Methods of Doing Plumbing or Heating Work—Name of Writer Required, Though Not Necessarily for Publication.

PNEUMATIC WATER SYSTEMS.

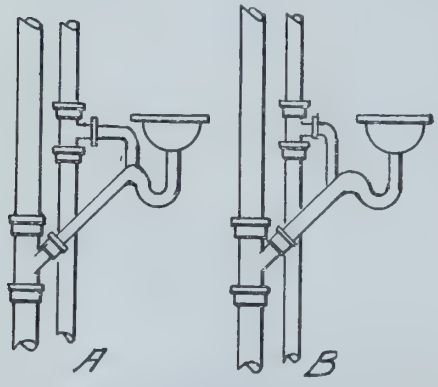
Editor Plumber and Steamfitter,—Can you give us the address of any firm making a pneumatic system for pumping water? Kindly let us have this information at your very earliest convenience.

Answer.—The National Equipment Co., 21-27 Lombard Street, Toronto, are the only Canadian company we know of who supply pneumatic water supply systems for country houses.—Editor.

OBJECTIONS TO CROWN VENTING.

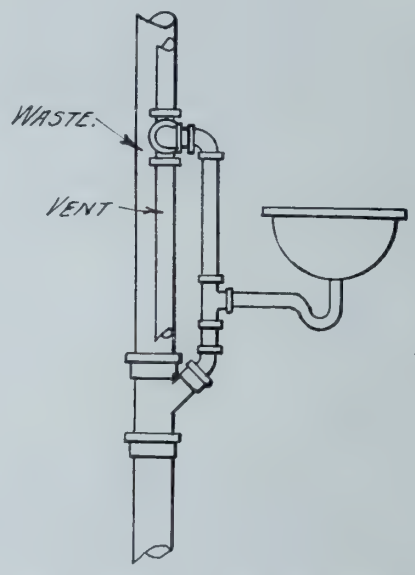
There are two reasons why venting traps from the crown is not the better way. One reason is that the nearer the vent is to the water seal the greater the evaporation of the water in the trap will become.

The other reason is that if there is much solid matter, such as grease, lint, hair, etc., in the waste, the vent opening, if connected directly to the crown of the trap, is apt to become entirely stopped. When W. J. Freaney, now a master plumber of Indianapolis, was plumbing instpector of St. Paul, Minn., he made an examination of vent openings from fixture traps and found that out of twenty-three traps from kitchen sinks, twelve were completely obstructed with grease, ten partially obstructed, and one perfectly clear, and this one had



"A" Shows Venting at Trap Crown and "B" Venting Below Crown.

been regularly inspected and cleaned. The illustration shows clearly why venting from a short distance below the crown of the trap is better than taking the vent directly from the crown. A still better method of venting a lavatory is shown in Figure 2, which is the loop, or circuit, method, which seems to be rapidly gaining ground in plumbing work. These are some of the reasons why in this particular case it is better; It permits the use of the half-S trap instead of the full-S trap, which is less subject to syphonage; the long outlet arm of the full-S trap greatly increases the syphonage action; the vent is farther away from the seal of the trap than would be the case if it were taken directly from the crown, this decreases the



A Better Method of Venting a Lavatory.

evaporation of the water in the seal of the trap; the waste connection is shorter than would be the case if the long-S trap were used and the waste taken to the floor; by this method of combining waste and vent a separate entrance into the main waste or soil pipe is always available and the action of the other fixutres in the bathroom has no effect upon the seal of the lavatory trap.—Domestic Engineering.

THE REPAIR OF DEFECTIVE PLUMBING.

It has long been a question in my mind just who should be held responsible for damage done to plumbing fixtures in a premises—the tenant or the owner. It is so in almost everything else around a house. There have been cases, no doubt, where a tenat has a grievance against the landlord of the property he rents and as a revenge he has deliberately injured a copper lined tub, broken the closet valve, seat, or done some damage to place the owner to an expense and possibly cause him to replace the fixtures with new ones. No doubt tenants have in some cases desired better or more modern bathtubs and fixtures and thought the only way they could get them was by such damaging. The agent, if he notifies them to move, receives another jab by the tenant putting rags, scrub brushes and other things of this character down a closet, necessitating a good bit of work for the plumber and the expenditure of quite a little for the owner before the plumbing appurtenances can be in operative condition again. The landlord always, of course, has recourse to the civil courts for redress, but, again, he has an expenditure of money, and so on it goes.

There have come to my attention a number of cases of obstructed sewers which have been complained of by the tenant to the agent and the same have been cleared, the cause being found to be tree roots where the sewer is of terra cotta. However, this trouble often occurs again and in time the old terra cotta sewer is nothing but repairs, because of the hesitancy on the part of the owner to spend sufficient money to replace the old sewer with cast iron, enough money has then been spent to have laid a cast iron sewer several times.

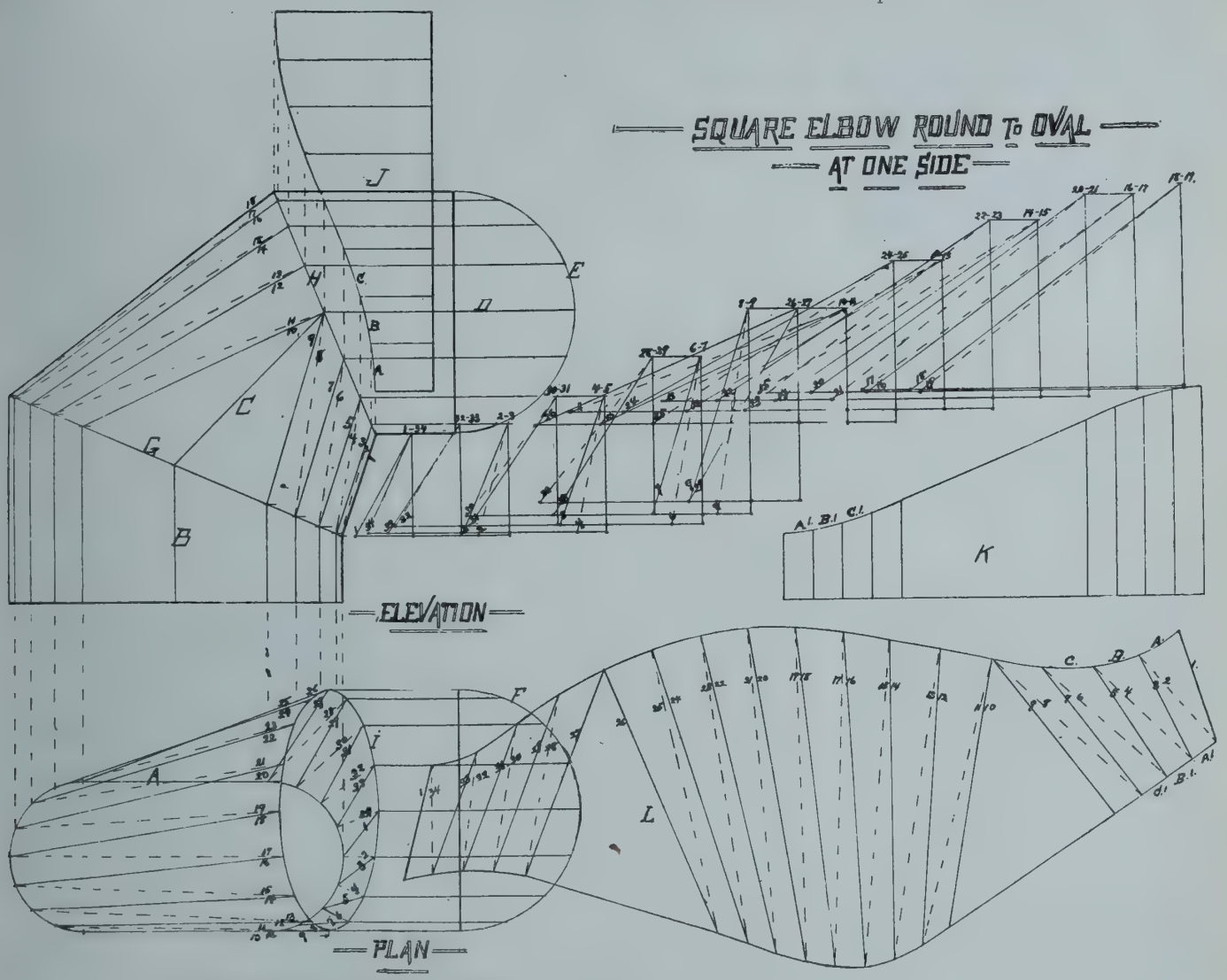
The courts of the District of Columbia have held that the owner is the responsible party in almost every case for repairs to plumbing and that he (the owner) must himself look to the tenant for reimbursement or satisfaction.

Of course the best real estate agents investigate the class of people who request the lease of their properties and can thus save themselves much worry as well as much money for their clients. In many cases here, and I have no doubt it exists elsewhere as well, real estate houses offer a month's rent out of each year with which the tenant can make whatever repairs he desires or are necessary; but in these cases the agent will not do work to more that that amount during the year. Of course if the tenant deems no repairs necessary he has the right to the month's rent himself.

Here in Washington a tenant can make complaint to either the Health Department or the Plumbing Office regarding defective plumbing and insanitary conditions in a house, and inspectors from each of these offices will make an inspection and a report to the chief of the department. If the conditions are found to be in violation of the regulations an order is served on the owner to correct the defects within a certain time, and if the repairing is not done an order is issued by the commissioners giving 10 days for the compliance. At the expiration of this notice, if the work is not completed, the Department takes the case to court, where the owner or party upon whom the notice is served

is generally fined. There is, among others, one case on record where an owner thought he could refuse to comply with the orders. The case was taken to court three times. He was fined $20 at the first trial, and because he did not then comply with the order he forfeited $10 collateral at the second case. The third time he was released on his personal bonds to do the work, which he finally did. Thirty dollars spent in fines, taken three times to court, and finally paying the plumber's bill which he would only have had to pay in the beginning.

of the different features of the works in question are about bringing the general public around to the conception of the idea that what they order done is reasonable, and there is a concerted action on the part of the real estate agents, owners and others to assist the officers in bringing about a more sanitary and better condition of affairs. It is no doubt due to the fact that this is the case and becuse of the exceptionally fine set of plumbing regulations in force here that other cities look so much to Washington as setting the example for the enthusiastic work of bettering conditions.



Square Elbow Pattern Round to Oval at One Side, Drawn by G. L. Gray.

Many cities have the same conditions and have as much and in some cases probably more authority. As here, some other cities have the right to enter a premises after certain conditions of law are complied with and do the plumbing work itself and then assess the cost against the property the same as a real estate tax and collect it in the same manner. But I am glad to say that by years of persevering the Commissioners and the immediate officers having charge The Homes Commission is exerting a good influence not only here but all over the country, as are also the different committees for the betterment of housing conditions which are working in nearly all the prominent cities.

J. F. BRADY.

Washington, D.C., Aug. 2, 1909.

SQUARE ELBOW PATTERN.

First draw oval end A in plan and centre lines B, C, D in elevation. Draw half circles E and F and space equally, and also oval end A, as shown. Draw lines from points in circles to mitre lines G and H, and also in middle section. Drop dotted lines from points on mitre line H to cross lines drawn from circle F. Draw oval line I; then draw all lines in plan, connecting points and number as shown.

Draw half patterns J and K and construct triangles for centre piece. It will be necessary to study these triangles closely before going ahead and to be sure that you have the proper length on the proper base line. After you have the triangles finished, make full pattern L. Be sure and make the spaces between numbered lines the same as marked by small letters.

TINSHOP TERMS.

Beading—A process usually performed in a hand-machine whereby a corrugation is formed in a sheet with a view of stiffening it, or of relieving what might otherwise be considered a too plain surface.

Flattening—A hammering process intended to relieve any part of a sheet

which, because it is in tension, causes more or less buckling of the whole.

Flux—A preparation which may be in powder, paste or liquid form for keeping clean the surfaces of metals during soldering.

Grooving—The closing tight or flattening of folded seams in such articles as the bodies of cans, boxes, etc., made from metal. Done in a machine.

Killed Spirit—The common soldering flux made by dissolving zinc clippings in hydrochloric acid, i.e., chloride of zinc.

Planishing—Closing the surface grain of metal by hammering, and so hardening it. Chiefly applied to copper. The supporting surface is usually highly polished as also is the hammer face.

Raising—The process whereby a flat sheet is made to assume cuplike or other hollow shapes by hammering with the pane of a suitable hammer on a hard wood block or metal anvil in which lumps have been formed.

Retinning—Uusually applied to all the processes of cleaning and re-coating copper vessels from which the tin is worn off by use.

Seaming—The joining before soldering of two or more edges by folding, lapping, or grooving.

Soldering—The process of uniting the surfaces of two metals by means of a film of molten metal or alloy.

Spinning—Circular raising is called spinning when done in a lathe, the metal-plate being held in a chuck with a hollowed back into which the metal is compelled to bed itself as it is revolved, pressure being brought on the face by means of simple hand-tools known as burnishers which are held against a rest. This operation involves the stretching of the metal. Used chiefly with copper and brass which have to be annealed, Britannia metal and German silver, but some tin goods are spun.

Stamping—A machine process whereby articles are pressed by a single sharp blow or pressure exerted continuously and slowly from the sheet metal or blanks previously cut from the sheet.

Wiring—The stiffening of edges and rims by the insertion of a wire over which the sheet metal is closed. The machine, by means of which the work is done, is known as a burring-machine or jenny.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Langlois & Soly, plumbers, Montreal, have dissolved.

Auclair & Vallee, plumbers, Montreal, have been registered.

J. L. Sasseville & Co., plumbers Magog, Que., have assigned.

The Barber Electric Co., Vancouver, are voluntarily winding up their business.

Alex. Crawford, plumber, Toronto, has taken J. Burns into partnership. The new firm name will be Crawford & Burns.

Tenders are being called for the erection of the new building to be occupied by C. M. Cookson, the Victoria plumber.

Hull, Que., plumbers have had their wages increased from 33 to 35 cents per hour, and steamfitters from 38 to 40 cents per hour.

St. Thomas builders who are connecting several houses with the one-sewer outlet are to get a jolt from the council. Engineer Bell is investigating, as connections can only be made by permit.

When the Insurance Electric Expert gets through with his inspection of wiring at St. Thomas it is likely that a great many residences will have to be re-wired as a lot of work has been done by amateurs who have no place of business.

Desmarchais & Fyfe, plumbers and fitters, Red Deer, Alta., have taken the store in front of their workshop next to F. H. Tallman's hardware store, and will fit it up for a showroom.

The Frontenac County Property Committee awarded the contract for the plumbing, the putting in of baths and lavatories, and the installing of hot and cold water in the Kingston jail and surgeon's office to Simmons Bros. Their figure was $1127.

A new heating system is being installed in the Institution for the Blind at Brantford. It will be one of the best in Western Ontario when completed. The Waterous Engine Works Company will install the boilers. The other contracts have not yet been let.

The Pease-Waldon Company, of Winnipeg, have secured several contracts for heating plants to be installed in public schools in various parts of the west. They will install furnaces in schools at Armstrong, B.C., Vernon, B.C., Lethbridge, Alberta, McLeod, Alta., and Medicine Hat, Alta.

F. J. Johnston, plumber, Portage la Prairie, has purchased a corner property on Main Street, south of the court house and will occupy the site for business purposes. It is Mr. Johnston's intention to erect a fine new structure on the corner which is in every respect a desirable location. When building and all improvements are completed the property will net up an outlay of $7,000. The building will be brick veneer, two storey, and with large basement.

The Western Plumbing & Heating Co., of Saskatoon, have been awarded the following contracts: Plumbing and steamheating the Bowerman Block, the Union Bank, and the Baldwin Block.

TO ONTARIO MASTER PLUMBERS.

A call has been issued for a convention of Canadian master plumbers in Montreal on Sept. 15 and 16, during the "Back to Montreal" week, when special railway rates will be available from every place in Canada.

The time for a re-organization of the trade in Ontario is opportune, and there ought to be a good representation of Ontario plumbers at this convention, to show our appreciation of the good work of our Montreal brothers in keeping the association alive.

I already have the names of a number of Ontario master plubers, who intend to attend the Montreal convention, and I want every one who can go to send me a postcard so that I can arrange for all to go down together in one party. There is going to be a "big time" at Montreal on Sept. 15 and 16, and I hope that I will hear from a lot of "old timers" as well as some of the newer men in the trade. Let's get together again.

GEORGE COOPER, vice-president for Ontario.

113 Church Street, Toronto.

The latter contains 27 bathroom suites. The same company have also the heating of the new warehouse for the International Harvestor Co.

Mitchell Bros., plumbers and electricians, Chatham, make an attractive evening display of their electric lamps and fixtures. These are hung from the ceiling of the shop, and have the current attached, so that at night time the lamps can be lit. The effect is brilliant, and the display constitutes a good demonstration of what the fixtures will actually look like.

A pretty wedding took place recently at the home of John B. Watt, 44 Grant

Street, when his daughter, Miss Etta M. Watt, became the bride of E. Blake Arnold, heating engineer of the Dominion Radiator Co., Toronto. Rev. Mr. Ross, of the First Presbyterian church officiated. The bride was formerly a member of the Watt plumbing firm's office staff. After a wedding trip to the states, Mr. and Mrs. Arnold will make their home in Palmerston Boulevard, Toronto.

Chatham, Ont., has still another plumber. The newcomer is Richard H. Jones, formerly of the firm of Arntfield & Jones, who has been conducting a gasfitting business, with offices at Lacroix Slip, for some months past. The license was granted by the water commissioners last week.

Merchants on the south side of Colborne Street, Brantford, including a number of plumbers and electric furnishers, have been greatly put about by the changes now being made. The street is being paved, and the street railway is double-tracking its line. The present line of rails has been moved adjoining the sidewalk, and as these

Pfeiffer & McVeigh, plumbers, Calgary, have assigned.

Legault & St. Jacques, plumbers, St. Louis, (Montreal) have dissolved.

J. Desmarchais, plumber and tinsmith, Red Deer, Alta., has taken J. Fife into partnership.

The office staff of Cluff Bros., Toronto, is being transferred this week

S. A. POTTICARY, ST. THOMAS.

Manager of the Smith Plumbing Co., Standing in Front of His Shop.

from the Lombard Street warehouse to the factory at West Toronto.

merchants have no back alley, delivery of heavy goods is almost impracticable. The merchants sent a delegation to the meeting of the city council and a resolution was passed alleviating the difficulty to some extent.

It is reported that the James Robertson Company, Montreal, will open a branch in Halifax at an early date. The rumor is from a pretty authoritative source, and they will probably be open for business before the snow flies. The Robertson Co. is said to have secured an option on a large warehouse on Hollis Street for a term of years. The premises are admirably adapted for the purposes, being commodious and centrally located.

The Wallaceburg Brass and Iron Mfg. Co. is running full blast, with nearly 40 hands steadily employed. An addition to the moulding plant, designed to accommodate more men, is being built, and a new 50 foot smoke stack is being erected for the foundry.

H. S. Harwood, manager of the James Robertson Co., Toronto, was called to Rochester, Minn., last week by the serious illness of his brother.

The Star Iron Company have transferred their Toronto office from 178 Victoria street to 646 Yonge street, where C. E. Pickard the new manager, conducted his plumbing and heating business.

A number of Toronto plumbing supply houses intend making special displays at the forthcoming exhibition at Toronto. The James Robertson Co., The James Morrison Brass Works, and the Amherst Foundry Co. have signified their intention of taking space.

A. S. Lamond, assistant secretary, C. S. Cornelius, supt., and C. H. Bakemeyer, Ontario representative of the Canadian Wolverine Co., Ltd., Chatham, visited Grand Rapids, Mich., on Aug. 11, 12 and 13, attending the annual Salesmen's convention of the Wolverine Brass Works, of which the Canadian Wolverine Co. is a branch. There were twenty-two salesmen present, three of those traveling in the States for the Wolverine Co. being Canadians.

ALL PLUMBERS TO BE EXAMINED.

Plumbing Inspector W. J. Gibbs and members of the plumbing board have made arrangements to start the examinations of journeymen and master or employing plumbers under the new ordinance on August 10, and those engaged in the plumbing business either as journeymen, masters or employers, must secure application blanks from the inspector.

Under the new ordinance, which combines gas as well as all other kinds of

L. J. O'DELL, LONDON.

Standing in Front of His Shop, King Street .

pipe fitting, no person engaged in the plumbing business shall be permitted to operate without a license. Before the license is secured applicants must go throught a thorough examination before

S. A. POTTICANY, ST. THOMAS.

One of the Firm of Potticany & Dixon, Attending the Recent Plumbers Picnic at London.

the plumbing board. The fee for a certificate, or license, is $5 for employing plumbers, and $2 for journeymen. Only one member of any firm or corporation of employers will be required to take out a license.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Municipal Undertakings.

A sewerage system to cost $25,000 is proposed for Dunnville.

London ratepayers have endorsed the artesian wells waterworks scheme.

The large water tank on Hill Crest, Port Stanley, recently collapsed. A new water station will be erected at once.

Operations will be commenced immediately at Guelph on the laying of the storm drains on Lower Wolwich Street.

Several new water mains have been ordered by the Ottawa waterworks committee.

Toronto is calling for tenders for the erection of an underground public lavatory at Broadview Ave. and Queen St.

On August 19 a by-law will be voted on to issue $7,000 30-year, four and one-half per cent. waterworks debentures.

Exeter, Ont., ratepayers will vote on August 20 on a by-law to issue $220,000, 5 per cent. 20-year waterworks debentures.

The B. C. Provincial Government have decided on the expenditure of $35,000 on waterworks improvements, Prince Rupert.

The North Sydney, C.B., town council have decided on the extension of the sewerage system on Margaret Street. Work will be proceeded with at once.

Tenders will be received until Aug. 10 for materials used in the construction of the waterworks and sewerage systems.

Broley & Martin have secured the contract for contsructing the pipe line from Fairy creek to connect with the present Fernie, B.C., waterworks system. Work will be commenced at once.

New Westminster, B.C., ratepayers will shortly be asked to approve of a by-law to raise $234,000 for water works improvements, and $104,000 for street improvements, the latter amount including a large sum for street lighting.

The Board of Health recently recommended the construction at Wiarton of a sewer on Berford Street 60 feet from the town line to Mary street, thence to Frank. This was approved of by the council. There will also be a drain on Taylor Street.

Mayor Dingman, Alderman Savage and City Engineer Ferguson recently submitted to the Provincial Board of Health, Stratford's plans for extensions to its sewage disposal plant. The sum of $25,000 has been voted for this purpose. Stratford uses bacteria beds in conjunction with its septic tanks and is now enlarging the beds and improving the system of treatment.

At a recent meeting of the Provincial Board of Health a Rainy River deputation submitted plans for waterworks and sewage disposal. Their plans provided for the treatment of sewage before it was discharged into the river. The town will draw its water supply from a point above the town.

The Victoria city council are to install eight bubble drinking fountains at different points about the city and suburbs. One is to be placed at the corner of Store and Cormorant Sts. The fountains are of the most modern type and there are no drinking cups. Work is to commence at once on the instalation of these fountains.

The provincial board of health took an important step, and one which will go to improve the health of Kingston. After May 1, 1910, no privy vault, cess pool or reservoir into which a privy, water closet, stople or sink is drained, shall be maintained in the congested part of that city. The method of disposal shall be by means of water closets, sinks and proper fixtures, connecting and discharging into the sewer.

With the object of saving money, the water committee of the Vancouver City Council has had estimates prepared of the needs of the waterworks system for the next two years, instead of for the next year only. The amount is $370,132, and includes 4,000 new services; 200 new hydrants; 30 miles six-inch mains and laying; 15 miles eight-inch mains; 5 miles 12-inch mains; 2 miles four-inch mains; new valves.

Public Buildings.

A $15,000 Separate School building will be erected at Fredericton.

Aldborough and Rodney councils will build a joint municipal hall at Rodney.

The Young Methodist Church will erect a new church building at Winnipeg.

Port Arthur Roman Catholics have planned a new church to be started early next year.

Extensive additions costing $75,000, are planned for the Royal Columbian hospital, New Westminster.

The King Street Methodist Church, Ingersoll, will be remodelled at an estimated cost of $12,000.

Snyder Bros., Winnipeg, at $98,269, received the contract for the construction of the new hospital at Regina.

The contract for the erection of the new town hall at Killarney, has been awarded to Geo. Brooks, for $8,650.

The plans have been prepared for the erection of a large theatre to be completed by October at Gananoque.

The erection of a sanitarium at a cost of $13,000 as a memorial to the late Sir Oliver Mowat is contemplated at Kingston.

The construction of a $20,000 school building, complete with heating and ventilating, will be commenced at once at Watrous, Sask.

The Moncton school board has accepted the tender of L. H. Estano for instaling a sanitary plant in the Victoria school there. The figures were $1,093.

General Building Notes.

A. E. Demers, Montreal, will erect three flats to cost $5,000.

The Ottawa Terminal Co. will build a station to cost $475,000.

H. Elson is erecting a $50,000 apartment terrace at Moosejaw.

A $25,000 business block will be built at Calgary by A. A. Dick.

J. C. Walsh will erect four cottages at Montreal, at a cost of $22,000.

E. Y. Grassett, Vancouver, will erect two frame dwellings to cost $10,000.

About $100,000 worth of building is in process of construction at Prince Rupert.

J. A. Virtue, proprietor of the Oak Bay Hotel, Victoria, is about to double the capacity of his hostelry.

The new premises for the Bank of Nova Scotia at Moncton, have been completed and the fittings are now being installed.

A permit has been granted to Martha E. Orris for the erection of a three-storey brick apartment block at Winnipeg to cost $41,000.

A permit has been granted to Baldry Bros. for the erection at Winnipeg of a residence, at a cost of $5,000; also to R. R. Pattinson for a house at a cost of $2,500.

Recent Winnipeg building permits include: C. G. Stuart, house, $3,500; F. E. Wilson, house, $7,500; A. E. Mullay, house, $7,500; Dunn & Wallace, house, $4,500.

Recent building permits issued at Brantford include Geo. S. Walker, Sarah Street, brick dwelling, $900; Geo. S. Walker, Arthur Street, brick dwelling, $1,600.

Plans have been completed by Fairchild & Barber, for a two storey building for T. H. Fick, on Kent Street, Simcoe.

The C.P.R. has accepted tenders for the new work at Aroostock Junction. The contract of J. H. Hague, of St. John, for the erection of two double cottages, and for a turntable foundation was accepted. The tender of H. Post, of Woodstock, N.B., for the erection of a boarding house and bunk house was also accepted.

McDonald, Wilson & Snyder, Vancouver, have been awarded contract for the construction of the superstructure of the new Masonic Temple, which will be located at the corner of Seymour and Georgia Streets. The price is $45,000. The excavation and foundation for the building has already been completed and paid for. The new building will be 50 x 120 feet, three stories high. Six stores on the ground floor will be for rent, while the Masons will occupy the rest of the building.

D. G Cooper is preparing to erect a new sawmill at Collingwood, on the site of the one destroyed a couple of years ago. A complete mill has been purchased on the North Shore, and will be removed and erected in Collingwood at once. The firm will be incorporated as the Kent-Cooper Company. It is expected that a couple of million feet of logs will be cut this fall.

Chas. Bailey will build a $14,800 store at Calgary.

A. J. Woodward is erecting an $85,000 apartment block at Vancouver.

Dr. Holmes, New Westminster, intends erecting a large business block.

The owners of the Kenniston Apartments, Ottawa, will erect a large apartment house at Toronto to cost $150,000.

Tenders are invited for the erection of a dwelling at St. Catharines for Louis Bissonette.

It has been announced that plans are now ready for the erection of a new station and freight shed at Cobalt. Work will commence at once.

Plans have been completed by Fairchild & Barber, for a new two-storey brick building for Q. H. Fick, Simcoe, Ont.

The Securities Corporation of Canada will erect at Vancouver a six storey reinforced concrete apartment house to cost $130,000.

A permit has recently been issued at Vancouver to P. Agren for the erection of a five storey apartment house. Estimated cost $50,000.

Plans have been prepared for the erection of a large apartment house at Grandview, Man. Construction will be started at once.

Ex-Mayor C. A. Foster, Haileybury, is having plans prepared for the erection of forty-four frame residences on his property overlooking Lake Temiskaming.

A permit has been granted to B. C. Cockshutt for the erection of five dwellings at Winnipeg, at an estimated cost of $9,000; also to J. McDiarmid Company, for two dwellings at a cost of $4,500.

Contracts for the immediate construction of the Toronto and London transformer stations in connection with the Provincial transmission line were let to Mitchell & Son, Toronto, for the former building, at $36,500; and Hvett Bros., London, for the latter at $23,500.

Some recent building permits granted at Calgary are: W. A. Bray, $3,500 residence; Robert Anderson, $5,000 stores and apartments; Norman Dafoe, $3,500 residence; R. J. Colgrove, two $900 dwellings; R. J. Colgrove, $1,000 dwelling; Albert Hunter, $1,000 dwelling; Alex. Dickie, $3,300 residence; Mrs. J. L. Foulkes, $3,500 dwelling; Thomas Joyce, $2,000 residence; W. F. Peers, $2,000 residence; J. A. Knoepfli, $1,500 dwelling; A. D. Irvine, $1,000 dwelling; Francis Rochon, $2,000 dwelling; Hugh McClelland, $3,000 residence; J. Bradley, $2,000 house; Edwin Frear, $1,000 cottage; Mrs. F. M. Black, $1,100 dwelling; J. T. R. Lush, $2,000 residence; M. C. MacPhail, $2,300 residence; Geo. W. Rae, $2,000 residence; G. W. Morfitt, $2,800 residence; H. Tansley, $3,500 residence; J. W. Costello, $7,000 store; J. W. Carlyle, $2,000 residence; Wm. Scott, $2,000 residence.

Recent building permits at Vancouver include: Lewis Carter, frame dwelling, $2,000; H. Vinall, frame dwelling, $2,500; alteration to Western Star Theatre, $1,600; A. J. Passage, frame dwelling, $1,500; A. Radlett, frame dwelling, $2,000; Mrs. Rundle, frame store, $1,000; G. W. Picken, frame dwelling, $1,200; James Chapman, frame dwelling, $1,400; J. A. Chisholm, frame dwelling, $1,800; E. Y. Grassett, frame dwelling, $3,700; I. S. Burton, frame dwelling, $4,800; Alex. Magee, frame dwelling, $1,600; Wagner & Johnston, frame dwelling, $2,400; D. M. Stewart, frame store, $9,000; G. H. Barclay, frame dwelling, $1,200; A. McLeod, frame dwelling, $2,000; F. Buscombe, alteration to store, $3,000; W. L. Tait, alteration to tenement, $7,000; R. Hudson, frame dwelling, $1,000; G. H. Crane, frame dwelling, $2,800; Thomas Kirkpatrick, repairs to dwelling, $1,200; E. J. Dobie, frame dwelling, $3,600.

THE BEGINNING OF IRON.

It is commonly believed that the use of iron commenced in either Africa or Asia, but Ridgeway, in his recently published work, "The Beginning of Iron," states that the latest investigations prove that iron was not worked in Egypt until the ninth century before the Christian era or in Libya until 450 B.C., that the Semites adopted its use still later, and that it has been known in Uganda only within the last five or six centuries. In China iron is first mentioned in 400 B.C. Bronze weapons were employed in China until 100 A. D., and in Japan until 700 A.D. According to Ridgeway, the metallurgy of iron must have originated in central Europe, especially in Noricum, which approximately represented modern Austria and Bavaria. Only at Hallsatt and in Bosnia and Transylvania, from which countries the Achaians and Dorians are supposed to have migrated to Greece, are found evidences of a gradual introduction of iron, at first as an ornament applied to the bronze which it ultimately displaced. Everywhere else, iron was introduced suddenly—a fact, which implies a foreign origin. Of course, Ridgeway does not assert that iron was unknown outside of central Europe. On the contrary, he states that meteoric iron was known in Egypt in remote antiquity, but that it was worked as flints were worked, by cutting or chipping, and was not smelted. In other words, it was the metallurgy, not the knowledge, of iron that originated in central Europe.

ANTHES IN THE WEST.

A certain railroad in Western Canada is not yet in very good working condition, and the trains consequently run at a phenomenally low rate of speed. When the conductor was punching his ticket a few days ago Laurie Anthes, of the Toronto Foundry Co., who is on a trip to Edmonton and other western points, was one of the passengers, remarked:

"Does this railroad company allow passengers to give it advice, if they do so in a respectful manner?"

The conductor replied in gruff tones that he guessed so.

"Well," Anthes went on, "it occurred to me that it would be well to detach the cow catcher from the front of the engine and hitch it to the rear, for we are not liable to overtake a cow, and what's to prevent a cow from strolling into this car and biting a passenger?"

STANDARD SANITARY MAY ENLARGE.

F. J. Torrance, Pittsburg, and Thomas C. Collins, Montreal, of the Standard Sanitary Manufacturing Company, spent a few days in Toronto last week.

Asked for information as to their visit W. A. Porter, manager of the Toronto branch, stated that although plans for the new enamelware plant to be erected in Canada are in the architect's hands, it has not been definitely settled as to whether the site will be chosen in Toronto or in Montreal. The opening of two new supply houses in Montreal and Winnipeg is also being considered.

The official opening of the supply house in Toronto is expected to take place in September. Alterations have been going on for about three months and the officers are now settled upstairs with a fine display room being arranged on the ground floor.

TOOK IT OUT IN TRADE.

"Won't you step up an' jine in a glass o' ginger pop, Si?" said Bill Granger, generously, to old Si Hayseed at the crossroads' store. "I just sold a six-weeks' old calf fer $9, an' I don't mind being a little reckless. What you say to a ginger pop?"

"Much obleeged, I'm sure, Bill," said Si, "but the fact is, ginger pop ruther goes to my head, an' I better let it alone."

"That so? Well, what do you say to a glass of sody? Like to have you jine me in something."

"Well, Bill, sody sort o' stings my throat an' makes me sneeze. But if you're bound to stand treat you might git ginger pop fer the other boys an', if it's all the same to you, I'll take fi' cents' wuth o' tenpenny nails. I come in to get a few fer a fence I got to fix, an' if you'd as soon I took the nails as a drink, I'm agreeable."

"All right, all right, Si. Anything to keep the baby quiet, as the sayin' is. Here, Mr. Storekeeper, you do Si up fi' cents' wuth o' nails an' take it out of this quarter!"

Even the promoter isn't always faithful to his trust.

PLUMBING AND HEATING MARKETS

TORONTO.

August 14.—A regular boom is on in the plumbing trade, and all the supply houses report excellent business. Demand from master plumbers in Toronto exceed the supply in some lines, especially galvanized pipe, malleable fittings and all enamelware lines. The sale of the latter is not confined to this city and manufacturers are pushed for stocks. The factories are running day and night and yet are three weeks and more behindhand with orders.

All the centres in the province where building has been active this summer reports state that trading is good, and Toronto supply houses feel more than satisfied with what is passing. Prices are unchanged on all lines and the market is very firm.

ENAMELWARE. — Manufacturers and jobbers report exceedingly fine business, and the former state they are pressed to fill orders. Although factories are running night and day they are unable to cope with the business offerings, and while taking care of all orders they are unable to do otherwise than place them on the waiting list, which means at least three weeks before they can be filled. Although manufacturers have been trying to get ahead with stocks for the past ten months just at present they are practically swamped. Prices are firm, though unchanged. The big demand is for baths and sinks.

IRON PIPE AND FITTINGS—In the same box with enamelware, so far as demand is concerned, this line is hard to obtain. There is a great scarcity of the smaller sizes of galvanized pipe, particularly the half-inch size. The prices are unchanged, the base being $4.54 for black, 1-inch size, and $6.19 for galvanized. Five per cent. off these prices is given for quantities. About 75,000 feet has been sold during the past fortnight locally. Black pipe, too, is increasing in demand and a great deal more is being used in new houses and for new instalations in old houses this summer than ever-before. Malleable fittings are scarce and the price is firm at 40 per cent. Cast iron fittings are steady at the new price, 65 per cent.

BOILERS AND RADIATORS—Steam boilers, 60 and 10; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 10; steam radiators, 50.10 and 2½ per cent.; angles and curves, 25 per cent.; these are still the prices on heating lines. Demand is increasing rapidly from week to week, and shippers say their hands are full trying to get out goods to all parts of the country. Steamfitters are particularly busy, and the prospects are good for trading right up to snow time.

LEAD PIPE—Sales are more frequent and orders call for larger stocks than was the case six weeks ago. The market is firm with prices unchanged. Pipe and waste are 27½ p.c.; traps and bends, 50 p.c.; and caulking lead, 4½ cents a pound.

SOLDER—Stocks are good and supplies are coming to hand freely. Demand is enormous just at the moment. Wiping at 18½ and half-and-half at 19 cents are the market quotations, and they are firm at these figures.

BRASS GOODS—This line is in a better position than for a year back. Sales are good, and active work in compression and fuller work is the order of the day.

MONTREAL.

Aug. 13.—The marked improvement noted in our last issue continues, and supply houses are very busy. Naturally there is a very bright tone to the markets, and all lines are firm. The heavy demand noticeable in soil and iron pipe still continues, and both lines are hard to get, especially in some sizes. Radiators and boilers are also selling well. Lead pipe and solder are moving in good shape, and altogether jobbers are very well satisfied with the business doing, and with the prospects for the fall.

Plumbers generally continue to be busy, and with building now going on and the operations marked out for the fall they should have little time on their hands right through to the winter, and scarcity in soil pipe and iron pipe should warn users that it is well to be prepared as to fall requirements. If with the present building demand there is a scarcity in some lines, what is likely to happen in the fall when authorities consider there will be something of a boom on. Plumbers would be well advised, therefore in stocking up a little, especially as the markets have a rising tendency.

As we anticipated the demand for soil pipe has caused prices to be withdrawn. The new quotations have not yet been issued other lines are unchanged. Iron pipe is firming up.

SOIL PIPE.—The strong demand for soil pipe and the scarcity in supply have, we understand resulted in manufacturers withdrawing their old price list. The new prices are not yet announced.

LEAD PIPE.—The demand is very active not only for pipe and waste but for traps and bends. There is a good tone to the market and we quote: Pipe and waste at 27½ off; traps and bends at 50; caulking lead at 5c per pound.

SOLDER.—Solder, in conjunction with the other lines, is selling well. Plenty of the metal is being used, while the growing strength of the markets generally seem to be inducing more stocking up. We continue to quote 19½c for half and half and 18½c for wiping.

IRON PIPE.—Owing to the strong demand there is a scarcity in some sizes of iron pipe, and the market is much firmer in tone. Jobbers have received some very large orders recently not only for Montreal but points outside. The market is unchanged and we quote: ⅜-in. to 4-in., black, 72½ off; galvanized, 62½ off.

RADIATORS AND BOILERS.—The active demand still continues, and some excellent orders have been received. Supplies are in good shape, and with the steadily improved call and uniform prices, supply houses are very well satisfied with the position. We quote: 50 and 10 off.

BRASS GOODS.—The market is firmer, while the demand has improved. There is still more inferior lines sold than should be the case, but the situation is improving. We quote: Compression work, high grade 60 and 10 off; standard, 70; fuller 75 off.

ENAMELWARE.—There is a fine call for enamelware, especially the finer grades. Certainly the majority of houses are now being fitted with the most reputable lines. Jobbers report an active demand. Prices are firmer and market in good shape.

METALS.—The metal market while unchanged is stronger in tone in consequence of the primary markets being firmer. We quote: Ingot copper, 14¼c; ingot tin, 32½c; lead, $3.55; pig iron, Middlesboro No 3, $16.50 to $16.75; Summerlee, $18.75.

INITIATION FEE TO BE INCREASED.

On September 1, the initiation fee of the Chicago Master Plumbers' Association will be increased from $10 to $15. The membership of the local is now somewhat more than 500, including over two-thirds of the legitimate master plumbers in the city.

Miss Tena McLeod, of the office staff of the Amherst Foundry Company, Toronto, has returned from an enjoyable holiday trip to Owen Sound, Detroit, Cleveland and Buffalo.

BUILDING NOTES.

A $2,000 school will be built at Blenheim, Ont.

J. & J O'Neil will erect a 16-storey hotel at Toronto.

A new Roman Catholic church will be built at Sherbrooke.

A new roundhouse will be built at Lindsay by the G.T.R.

Two large double tenement houses are being built at Sherbrooke.

A. B. Ormsby, Toronto, will build at Mimico, a $65,000 residence.

The B.C. Electric Ry. will build a number of stations along its line.

The Royal Victoria Hospital, New Westminster, will be enlarged at a cost of $75,000.

The Ottawa Electric Co. will build a $20,000 addition to their Chaudiere power house.

The American Horse Shoe Co., Erie, Pa., may locate a Canadian branch at Port Arthur.

The new Women's Building at the Victoria Fair Grounds will be commenced at once.

The contract for the new high school at Edmonton was awarded to Carmel & Spencer, at $105,101.

Grimsby, Ont., council will submit a by-law to the ratepayers to provide $15,000 to erect a new high school.

English capitalists are touring the Niagara district looking for a suitable location for a tin plate factory.

The Roman Catholic corporation of Hamilton, will erect a new church and separate school in Dundurn Park.

Plans are being prepared by E. J. Lennox for a large buisness and office building on Yonge street, Toronto.

The contract for the new Ashbury college, Ottawa, has been awarded to Byers & Anglin, Montreal, at a cost of $45,000.

The Toronto Bedding Co. has been granted a permit for a new factory building at that place, to cost $22,000.

Strathcona, Alta., ratepayers of this city will be asked to vote on August 9 on a by-law to raise $15,000 for the erection of a fire hall.

Work will shortly begin on the erection of the new steel framework for the Sherbrooke Stadium. The contract has been let to the Jenckes Machine Co., and the rink will be completed in time for skating in December.

A permit has been issued by the Toronto city architect to the Cummings-Lumsden estate to erect a ten-storey and basement office building at the northeast corner of Yonge and Adelaide Sts. The building will be constructed of steel and brick and will cost $150,000.

Condensed or "Want" Ads.

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PRACTICAL HINTS ON JOINT WIPING, for beginners in plumbing.—This book contains two original articles on joint wiping by experts, together with a selection of letters and articles on various important phases of the subject. 66 pages, 41 illustrations. Price 25c.

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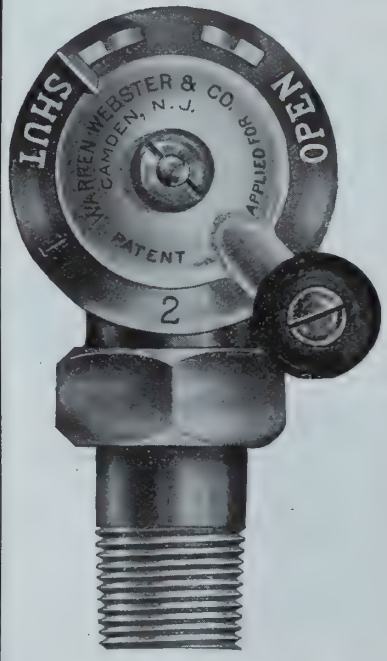

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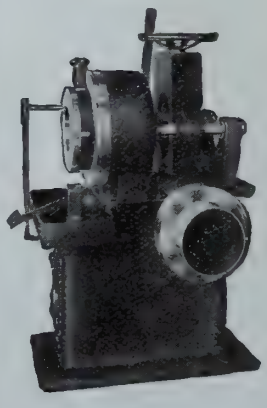

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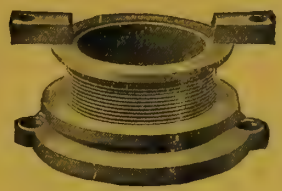

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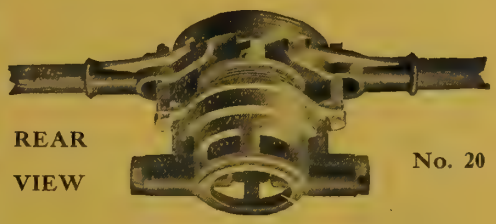

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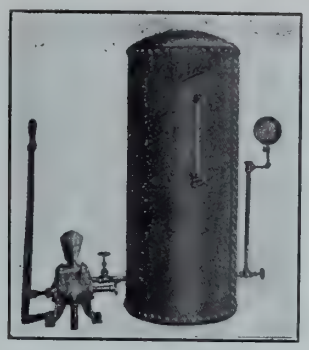

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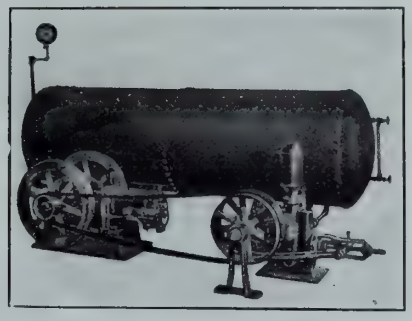

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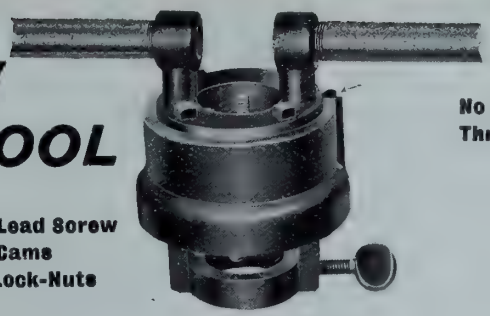

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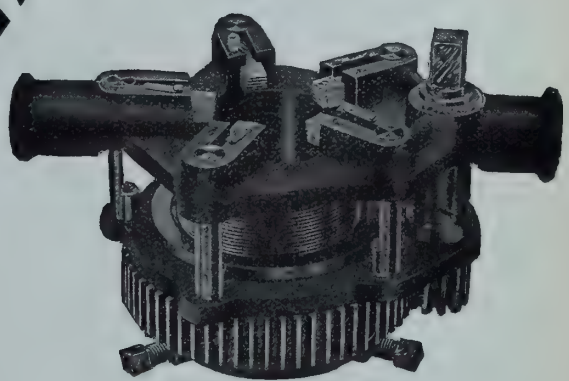

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TORONTO, SEPTEMBER 1, 1909

BENEFITS DERIVED FROM ASSOCIATIONS AND CONVENTIONS.

One of the interesting addresses delivered at the recent master plumbers' convention at Detroit, was on the subject of the benefits derived from belonging to associations and attending conventions, the speaker being John E. Dugan, Albany, N.Y.

"What I desire to bring out above everything else," said Mr. Dugan, "is that the spirit of co-operation is the true, the natural and the coming method of procedure in all walks of life and action; that, through the process of evolution it is, perhaps imperceptible to many of us, entering into the daily affairs of life, particularly is this noticeable in commercial activities, which within the past quarter of a century have developed in some instances into gigantic corporations.

"Were I asked what, in my opinion was the greatest benefit derived from my association with my fellow plumbers of this country, I would say and with material satisfaction, that it was the cementing of lasting friendships. I esteem it as one of the greatest privileges open to men of our craft to become the associate and friend of the thousands engaged in the business. Some of my closest friends are numbered among you, most of whom I should never have known had not our little ship taken us aboard in its voyages of the past.

"Perhaps the three principal benefits derived from our association, one with the other, have been of a social, intellectual and a financial nature. The social benefits are too well known to dwell upon. It might not be amiss to note that the old-time plumber, he who knew it all and whose brother plumber across the street, or next door, knew nothing and amounted to less, has long sinse been buried. If perchance, any such survive at this late date, they are dead but do not know it. They were the fellows who wanted to know "What good the association would be to them"; they expected that by becoming members their coffers would immediately be surcharged with wealth from mysterious and other sources. They were all "I and mine" not "We and ours."

"Explorers, pioneers, and progressive men never come from such family environments; they come from those who say, "Let's get together and work in common, our interests are identical, at any rate, let's be friends." And some have been friends these many years. We meet in annual conventions, in state and nation, and we believe we are not deceived in the fact that it is a good thing to do this. Whether it is or not, we propose to continue while life lasts, to be good fellows together and prove to the world of progress and enlightenment that plumbers are possessed of the very finest caliber of humanity, and up in the van of the procession toward co-operation or the age of man for man, and not man against man.

"The intellectual benefits are varied. By an interchange of thoughts and opinions, we impart to each other perhaps matters which have taken us years to discover. Any knowledge of value to the trade we may possess, is the other fellows, without the formality of the asking. New ideas and inventions have kept pace with the advancement of our alliance. Let your mind wander back say a quarter of a century and you will find that most of the plumbing existed in back yards and was installed by carpenters. To-day after our years of organization, agitation, invention and legislation, we have plumbing which is not only sanitary, convenient and useful but so artistic that it is a subject of special exhibition to visitors in our modern homes and buildings.

"Almost all of this marvelous change is largely due to our communing with each other and co-operating with sanitariums, connected with other professions. Our chief reward, in this instance, may be said to be the high standing to which the plumbing art has attained in the public eye and the correlative recognition of the plumber as a factor of importance in the community. Conceited, narrow minded individualism could never have brought such a change about. It is the work of association of progressive minds and co-operative efforts.

"The financial benefits are our least, of course. This we know, but the public will not give us credit for it for you know the daily press keep us rated in the Rockefeller class. This rating, however, is not accepted by the manufacturers and dealers, as you are well aware, but even at that, it looks well in print, for God knows we deserve it, and, if our imaginations are sufficiently imaginary and entirely beyond our control, we might grow to believe it true.

"Pioneers seldom or never benefit financially; they are too busy to think of money; they are often even happy in their poverty, frequently die in want, sometimes have an imposing shaft erected to their memory by a grateful community several thousand years after they have passed on "To that undiscovered country from whose bourne no traveler returns.'

"I sometimes think that as a class, we are something in the nature of pioneers. We seem to care little for financial remuneration, commensurate with the service performed. We seem to have the good of the public entirely at heart. This is a noble sentiment but it must not be carried to extremes.

"Seriously, brethren of the craft, if I judge coreectly, as a class, we do fall down on the financial question.

This appears to be our very weakest failing for which, however, we can not justly accuse our associations, local, state or national. Indeed, from my point of view, the fault is not even entirely and individually our own, as some contend. The mass of human society from time immemorable has ever struggled just along the border line of want. To discuss the cause of this would consume too much time and be somewhat foreign to the subject.

"We have a right, and should place a value upon our ability and a reasonable profit upon the material we handle. Should we fail to do this we must not blame the public as many are wont to do. We must stand or fall by our own fixed standard of value in our respective communities. As a rule a person is taken for what he is worth and most always establishes his own value.

"Let us regulate our business so as to insure a fair compensation for the knowledge we put into it and for the great conveniences we establish in every household and for which the public will always be glad to co-operate, but only upon such a price as we select. We now fix the price but too often unfair to ourselves. Of course, there are some exceptions most of whom we find at our conventions, because the necessity of making a legitimate profit has been hammered into their brains so often and for so many years that they could not avoid taking the hint and so became comfortable.

"Strive to place our craft on the highest pinnacle, and it cannot be too high; attend the conventions as often as health, time and circumstances permit; participate in the life of your local and state associations as well, be a factor in their struggles, for as that home, that country is strongest and happiest where all cheerfully co-operate, so will that association be most beneficial where all work in unison.

"He gets the most out of life who participates in life's duties, struggles, sorrows, happiness, who lives with and for his fellow men. That plumber will get the most out of life and his adopted profession who joins his brethren of the craft in association fellowship, and as frequently as convenient, attends the meetings and conventions.

THE CANADIAN NATIONAL M. P. CONVENTION.

Interest is increasing in the National Master Plumbers' convention, to be held at Montreal on Sept. 15 and 16 during the "Back to Montreal" week when single fare rates will be obtainable on all railways on the certificate plan, excursionists paying full fare down and securing a return trip free by presenting the certificate obtained from the local ticket agent.

While the Montreal committee have not yet announced the official program it is known that a lively time is being arranged for the entertainment of visiting plumbers, and the local master plumbers and supply men will be certain to see that nothing is left undone to make the gathering a success.

Indications are that the attendance will be greater than at any national convention for the past five or six years, and a good delegation from Ontario is assured, Toronto alone being expected to send at least half a dozen.

George Cooper, vice-president for Ontario, has been particularly active in arousing interest—a circular letter being sent out to the trade a fortnight ago. Responses are coming in from all directions, although some places are conspicuous by the absence of replies from any members of the trade in these places.

One master plumber, writing to Mr. Cooper, states that he cannot attend this convention, but wishes the gathering all kinds of good luck. He further suggests that all firms who cannot send a representative pay their per capita tax to the National Association in order to strengthen it and enable the officials to continue their activity until a reorganization of the provincial association has been achieved.

Arrangements are being made for the Toronto and Western Ontario delegates to go to Montreal together, and any who are planning to go should advise George H. Cooper, 113 Church Street, Toronto. The rate from Toronto is $10.

Let there be a rousing convention at Montreal on Sept. 15 and 16 and have Canada again in line with the organized master plumbers' movement. The standards of plumbing work in many cities need to be uplifted, and no organization can do this work better than an association of master plumbers.

"Back to Montreal" on Sept. 15 and 16.

PLUMBING INSPECTION SHOULD BE COMPULSORY.

The following letter from Dr. Hodgetts, chairman of the Provincial Board of Health, Toronto, dealing with the editorial in The Plumber and Steamfitter of Aug. 2, commenting on the fact that the city of London (Ontario) is behind the times in failing to require an inspection of the plumbing work done in that city. Dr. Hodgetts writes:

> Editor Plumber and Steamfitter,—I beg to acknowledge receipt of your favor with editorial clippings from your valuable journal dated Aug. 2nd, entitled "A City Behind the Times," and "What Plumbing means to Municipal Health."
>
> In respect to the first article, which I note particularly refers to the city of London, I can simply say it is impossible for any municipality to enforce the by-laws as contained in Schedule B of the Public Health Act in so far as they relate to plumbing, unless there is an efficient inspection by the local Board of Health, which is the statutory body to enforce the same in each and every municipality in the province. That municipal councils have the power to license and regulate plumbers, is quite evident from Section 557 of the Consolidated Municipal Act, sub-sec., 25 and 26, and it is a regrettable fact that the legislation is not made obligatory for local authorities to enforce. In my opinion matters of this kind should not be permissable, but the statutes should be changed making them obligatory.
>
> As regards the second article, I can simply say that I coincide with every word in the last paragraph and sincerely trust that the articles from your valuable journal will awaken the public as well as the right-thinking municipal authorities to the necessity for some changes in the Public Health Act.
>
> CHAS. A. HODGETTS, M.D.,
> Chief Health Officer of Ontario.
> Toronto, August 20.

The London Advertiser, in its Aug. 11 issue reproduced in full our editorial on "A City Behind the Times" under the heading "A Warm Roast for the Forest City."

Occasionally a warm roast is required to stir public officials into action and it is to be hoped that Dr. Hodgett's endorsation of our criticism will have the desired effect and bring London into line with the progressive cities of America.

Vancouver's Newly Adopted Plumbing By-law

Pased by Vancouver City Council on July 19, 1909, After an Agitation Extending Over Two Years—Regulation of Plumbing Covered Together With Construction and Maintenance of Drainage and Sewerage Works.

By-law for the regulating of Plumbing and of the construction and maintenance of drainage and sewerage works, and of connections therewith. The Mayor and Council of the City of Vancouver in open meeting assembled enact as follows:

Interpretation.

1. In the construction and for the purposes of this by-law, if not inconsistent with the context or subject matter, the following terms shall have the respective meanings hereinafter assigned to them, that is to say;—the word "building" shall mean any erection of whatsoever nature constructed within the limits of the City of Vancouver. The word "person" shall, when used in this by-law when necessary be held and construed to mean and include natural persons of either sex, associations, co-partnerships, corporations, whether acting by themselves or by a servant, agent or employe; the singular number shall when necessary be held and construed to include the plural, and the masculine pronoun to include the feminine. The word "applicant shall mean and include the person actually making application for a permit, and also the person on whose behalf the said application is made. The word "works" shall mean plumbing, drainage or sewerage works or connections with any sewer, either public or private. The word "construction" shall include reconstruction or alteration. The word "city" shall mean the City of Vancouver. The word "Inspector" shall mean the person or persons appointed from time to time by the said City subject to the provisions of this by-law for the purposes of inspecting any works carried out thereunder.

2. All works as defined by this by-law constructed in the City of Vancouver after the passing thereof shall be made in accorance with the provisions thereof, and any person, constructing any portion of the same contrary to the provisions of this by-law or any other by-law or by-laws of the City of Vancouver, or any owner or agent permitting the same to be constructed, shall be guilty of an infraction hereof and liable to the penalties of this by-law.

3. Before proceeding to construct any works in any building or in connection therewith, in the City of Vancouver, the person constructing the same shall file in the office of the Plumbing Inspector an application for a permit. The application shall be in the form contained in Schedule "A" of this by-law and such application shall be accompanied with the specifications and abstract thereof, which abstract shall state the nature of the work to be done, and shall set forth the size, kind and weight of all pipes, traps and fittings intended to be used in the said works, together with a description of all closets and other fixtures, and also a description of the lot, block, and district lot and street on which the building in connection with which the intended work is to be contstructed, is situate, with the street number marked. The said plan shall also show the drainage system of the said buildings complete to the street lines. All plans required under this section must be legibly drawn in ink on a scale of not less than eight feet to the inch, and must show that the proposed work conforms with the provisions of this and any other by-law or by-laws of the City of Vancouver, and no permit shall be issued to any applicant unless said plans are filed as aforesaid.

Duty of Inspector.

4. It shall be the duty of the Plumbing Inspector, when any plans and applications are filed to inspect the same, and in case the said plans do not conform to the provisions and requirements of this by-law or any other by-law or by-laws of the City of Vancouver, he shall refuse to issue a permit for the construction of the proposed work. And in the event of any such refusal, he shall notify the said applicant within two clear days of such refusal. If the application and plans filed comply with the aforesaid requirements, he shall forthwith issue a permit as aforesaid, and in the event of such permit being issued, the work shall be carried on under the same and proceeded with within thirty days after the date of issuing of the same, otherwise the permit granted shall terminate. The permit shall be in the form contained in Schedule "B" of this by-law, and any person doing any work mentioned in this by-law without first having obtained such permit, shall be guilty of an infraction hereof and liable to the penalties of the by-law.

5. No application, plan, specification or abstract filed in accordance with the provisions of the preceding section shall be altered after the permit provided for by section 3 hereof has been issued, and in the event of any alteration or deviation being desired by such applicant a new applicantion, new plans, and new abstract must be filed, and a new permit must be applied for and obtained under the provisions of section 3 of this by-law.

6. No such work shall be covered or concealed in any way until it has been examined by the Inspector and found by him to have been:—(a) Constructed in accorance with the plans, specifications and abstract filed as required; (b) Found to comply with the requirements of this by-law or any other by-law of the City of Vancouver; (c) Tested by filling all pipes with water to the highest point

DISCUSS THE VANCOUVER BY-LAW.

Printed copies of Vancouver's new plumbing by-law, passed at a meeting of the Vancouver City Council, on July 19 last, are now being circulated, and Plumber Inspector Townley has notified the plumbers of Vancouver that the revised regulations will hereafter be enforced.

According to a despatch received form that city the order has created all kinds of complications because of the filing of plans according to the old by-law, but not conforming to the new measure. Several clauses of the new by-law it is said will work hardship on of a higher standard than has previously been used. The supply houses are now stocked with supplies of the old type, and they have appealed to the health committee, asking that the clauses altering the class of materials be held in abeyance until the supply houses can work off the stocks they have on hand.

The Plumber and Steamfitter solicits correspondence from all men engaged in the plumbing trade, giving opinions regarding the new by-law, criticizing or commending its features and clauses, and outlining wherein it might be improved.

and allowing the same to remain in such condition for the space of ten (10) hours, so as to determine whether such pipes will not leak.

7. On the completion of any work for which a permit has been issued, the applicant shall notify the Plumbing Inspector, who shall forthwith inspect the same. If the Plumbing Inspector shall find that the said work has been carried out in conformity with the plans filed, and in acordance with the provisions and requirements of this by-law or any other by-law or by-laws of the City of Vancouver, and stands the test required in sections 6 and 8 thereof, he shall issue a certificate of completion for the said work to the said applicant, which shall be in the form contained in Schedule "C" of this by-law. If on said inspection he shall find said work has not been carried out in accordance with the plans and specifications aforesaid, and in accordance with the provisions of this or other by-law or by-laws of the said city, or does not stand the test required in sections 6 and 8 he shall refuse such certificate, and in the event of such refusal he shall notify the applicant, who shall cause the work to be reconstructed in such a way so the same shall conform with the plans filed and with the requirements of this or other by-law or by-laws of the City of Vancouver. Any applicant refusing to reconstruct the work as aforesaid shall be guilty of an infraction of this by-law, and liable to the penalties thereof. Such certificate shall be issued to the applicant in duplicate and one shall be filed by the applicant with the Water Department and one with the Health Department of the city.

Tests of Completed Work.

8. Before the certificate provided for in section 7 of this by-law is granted for any plumbing work, the Plumbing Inspector shall subject all plumbing work to a final test as follows:—By closing all vents and forcing smoke into all pipes and connections, and determining that no smoke escapes from such pipes and connections, and no certificate as provided for in said section 7 shall be issued unless such work satisfactorily stands such test..

9. The applicant shall pay to the Inspector for the use of the city, the sum of one dollar, for every visit which the Inspector shall make pursuant to notice or notices given by said applicant under section 7 thereof, when the work is either found not ready for inspection or has not been performed in accordance with the requirements of this by-law, thus necessitating a further visit by the Inspector.

10. All material used in any work shall be of good quality and free from defects, and the work must be executed in a thorough and workmanlike manner.

11. When any building, application for permission to construct any works in connection with which is made, is situated on artificially made or unsound ground, or if the works are inside of any buildings, the house sewer shall be of medium heavy cast iron or brass pipe (screwed joints) with joints properly calked with lead in iron pipes and screw joints in brass pipe. When buildings are situated on sound ground, hard salt glazed vitrified pipe may be used (provided that such ground through which said pipes shall run is outside such building). Each length of pipe shall be wetted before being laid and the space completely filled in with cement mortar; such mortar shall be composed in proportions of two of good clean, sharp sand, and one of the best Portland Cement, and if the works are constructed in wet ground, a gasket shall be placed around the spigot and forced down to the bottom of the socket and furnished with mortar cement as described above. Each length of pipe must after being laid and cemented be cleaned out with a mop. The different lengths must be laid in such a line and manner so as to make a smooth bore on the inside of the must be through "Y" junctions.

Soil and Waste Pipes.

12. All soil pipe passing through a building or beneath the floor of the basement or cellar shall be of cast iron or brass and of the weights laid down in Section 49 of this by-law and shall extend to at least five feet outside the building, and no wall shall be built so as to run solidly upon the same. All sewers within five feet of walls must be constructed of cast iron and shall be extended at least five feet beyond the building.

13. All mains, soil or waste pipes shall be extended at their full diameter to a height of at least ten inches above the main roof of the building in which they are fixed or in the event of any windows being situate in such roof then to a height of at least ten inches over such window or windows, except in the case of roofs of buildings used for drying purposes; in which case they shall extend seven feet above the said roofs and shall be suitably braced.

14. All side branches of soil pipe extending fifteen feet or more from the main line of pipe must be extended at their full diameter through the roof of the building in which they are placed.

15. It shall be unlawful to connect the exhausts from steam engines; the blow-offs from steam boilers, or the overflows from water motors with an sewer whether public or private.

16. All soil or vent pipes in an extension must be carried to and above the roof of the main building in which they are placed, and no such pipes shall be constructed so that the outlet from the same shall be placed below any window or within twenty feet of the window or openings of the said building or of any adjoining building.

17. It shall be unlawful to construct any work in which soil pipes shall be used having a diameter of less than four inches. All waste pipes receiving the discharge of five or more sinks shall not be less than three inches in diameter and shall not have less than two inches in diameter branches.

Weights of Lead Pipe.

18. When lead pipe is used to connect fixtures with vertical soil or waste pipes or to connect traps with main ventilators such pipes shall not be less than the following weights:—

1½"	pipe	shall	weigh	2½	lbs.	per	foot.
1½"	"	"	"	3	"	"	"
2 "	"	"	"	4	"	"	"
3 "	"	"	"	6	"	"	"
4 "	"	"	"	8	"	"	"

19. Trap vent pipes shall be brass, copper, lead, cast iron, or galvanized wrought iron. All traps and fittings shall be equal in quality and thickness to the pipes to which they are attached.

20. The caulked joints in sewer pipe, soil pipe, waste pipe and ventioators shall be made with a gasket of oakum and lead hand caulked full and shall be perfectly gas tight.

21. All connections of lead pipe with cast iron pipe shall be made with a brass ferrule of diameter of not less than the lead pipe, placed in the hub of the iron pipe, and calked with lead. The ferrule shall be connected with the lead pipe by a wiped joint. Vent and flush pipes shall be connected with brass couplings. All ferrules shall be four inches long and shall weigh not less than the following weights:—

Ferrules	4"	in length	shall	weigh	2½ lbs.
"	3"	"	"	"	1¾ "
"	2"	"	"	"	1½ "

22. All connections of lead, waste and vent pipes shall be made with wiped joints.

Traps to Fixtures.

23. All water closets, urinals, sinks, basins, washtrays, baths, tubs, or sets of tubs and hydrant waste pipes, shall be separately and effectively trapped; provided, however, that when sinks and washtubs immediately adjoin each other. the waste pipe from the tubs may be connected with the inlet side of the sink trap. Urinal platforms, if connected with sewers must also be effectively trapped, vented and automatically flushed with water from a supply tank.

24. Traps shall be placed as near the fixtures as practicable, and in no case shall a trap be more than two feet from the fixture. All traps must have a cleaning out screw on the underside.

25. The waste pipes from fixtures, other than waterclosets shall be provided at the outlet with strong metal strainers, and all sinks shall be provided with P. or S. traps.

26. No waste pipes from other fixtures shall be connected with a watercloset vent horn.

27. All traps shall be protected from syphonage by a ventilating pipe leading from the highest and outer portion of the trap, and such pipes may be separate or may join the main ventilating pipe above the highest fixture.

28. All branch ventilating pipes attached to waterclosets shall have a diameter of not less than two inches for buildings for the first two stories, and not less than three inches in case such pipes are constructed in buildings having more than three stories.

29. In the case of a bath or a basin being constructed in the same room with a watercloset, the vents for the same may be connected with the closet vent and in making such connection the pipe must be raised at an angle of at least 6 inches in every foot, but in no case shall more than two waterclosets communicate with the same ventilating pipe, unless said pipe has a diameter of not less than three inches.

30. All safes constructed under an ice chest, basin, bath, urinal, watercloset or other fixture, shall be drained by a special pipe, which shall not be connected with any sewer waste or soil pipes, and shall discharge into the open air. The outlets of all such pipes shall be provided with flap valves.

Ventilated Rooms Required.

31. All water closets shall be supplied with water from special tanks except where special flushometers are used, the water from such tank shall be used for no other purpose other than that of flushing the said waterclosets. No watercloset shall be directly supplied from the watermains or service pipes except where proper flushometers are used. All watercloset tanks shall be fitted with ball taps which prevent waste of water.

32. It shall be unlawful to connect any soil pipe, waste or sewer pipe with any refrigerator.

33. No overflow or discharge pipes connected with tanks used for holding water for drinking or cooking purposes shall be connected with any soil, vent, waste pipe, or sewer.

34. It shall be unlawful to construct or fit up any watercloset, urinal, drain, or soil pipe in such a manner that any gas or odors can escape from the same into the house, room or compartment in which the same are constructed, or in such a manner that filth or dirt can accumulate in the same, and no closet, urinal, drain or soil pipe, which has been so constructed, shall be used in any way by the occupants of the house or building in which the same are constructed, or by any other person.

35. All floor connections for waterclosets shall be made with heavy cast brass floor flanges, weighing not less than one and one-half pounds. Such flanges shall be recessed on the underside in order to receive the bolt heads, and shall be slotted so as to allow the bolts to be adusted to holes in the flange in the closet bowl. Where lead bends are used the lead properly soldered to the inside of the floor flange, which flange shall be sunk in the floor. The watercloset bowl shall be bolted to the floor flange by not less than two one-quarter inch brass bolts, which bolts shall be fitted with washer and nuts. A hemp gasket of not less than one quarter-inch in thickness and one inch in width, and filled with red lead and linseed oil of the consistency of a thick paste, shall be used between the closet flange and the brass floor flange in such a manner as to effect a tight connection, and to prevent the escape of sewer gas into the room.

Excavations in Streets.

36. Before any person shall make any excavation in any street, for the purpose of making any connection with any sewer in the city, he shall make application for and obtain a permit so to do from the city engineer, which permit shall be in the form contained in schedule "D" of this by-law, and shall satisfy the city engineer that he complied with the provisions contained in section 3 of this by-law, and shall deposit with the city engineer the sum of $5, except on paved street and alleys, in which case the sum shall be $25, which sum shall be returned to the said applicant, if the said engineer shall find after the work has been completed that the street or lane has been restored to as good a condition as it was before such excavation was made. All such connections shall be made under the supervision of the city engineer and subject to the provisions of this by-law and other by-laws of the city, and no such sums deposited as required under this section shall be returned to the applicant until the said work has been completed as required by this bylaw.

37. All excavations or openings in any street in the city, made for the purpose of constructing any works, shall be made within five days from the date of the issuing of the said permit to make the same, and should the said excavation and opening not be completed and filled up within three days from the time of commencing such excavation the applicant must take out a new permit, and any person making or permitting such excavation to remain unfilled after the above mentioned period has elapsed shall be liable to the penalties of this by-law.

38. Any excavation, permission to make, which has been obtained under the preceding sections shall be properly guarded and protected by the applicant, so as to prevent said excavations from becoming dangerous and shall be guarded by night, by two red lights, and the said excavation shall be sheet piled, when necessary, in order to prevent the adjoining earth from caving in by its own weight.

39. Whenever any such excavation shall be carried below or adjoining the street sidewalk, the applicant shall preserve from injury such sidewalk, and shall sustain and protect and underpin the same, so that the said soil and sidewalk shall be made to remain practically as safe as before such excavation was commenced.

40. If the applicant shall negelect or fail to protect the sidewalk as above provided then the said engineer may furnish such support and protection to the sidewalk as may be required. The expense incurred in connection with the work shall be deducted from the sum deposited by such applicant as provided in section 36 of this by-law, and if the said sum so deposited, shall not be sufficient to cover the expenses incurred by the said engineer, any additional expenses shall be collectable from said applicant, which sums shall be collectable in any Court of Law of competent jurisdiction at the suit of the city.

41. On the completion of the said work the said excavation shall be completely and properly filled in by the applicant and the surfaces of the street shall be restored to and left in as good condition as it was before the said excavation was made and all materials, loose earth and rubbish shall be removed within 24 hours after the excavation has been filled in.

Sewer Pipe Details.

42. No house sewer pipe shall have a fall of less than one foot in forty.

43. No private sewer in actual use shall be disturbed or opened up unless permission to open the same shall be applied for and obtained in writing as provided in Section 3 of this by-law.

44. All sewer, soil, or waste pipes must run in as straight a line as possible so as to connect with the sewer, and in

the event of an unavoidable change in direction of horizontal pipes, they shall be constructed with "Y" branches and 1/8 bends. Offsets in vertical pipes shall be made with forty-five degrees bends or similar fittings. No one-quarter bends shall be used. No heel in the bends shall be used below the fixtures.

45. All plumbing in restaurants, hotels and boarding houses shall be fitted with cast iron, enamelled or brass grease traps and shall have not less than 2-inch waste and vent pipes.

46. No double hubs shall be used on soil or waste pipes below the fixtures.

47. All vents from sinks shall be of not less than 2 inches in diameter.

48. In the event of waterclosets situated on top floors, and the waterclosets not being more than 30 inches from the stack, the vent may be dispensed with. No other fixtures shall be connected with a watercloset bend, and each watercloset must have a separate fitting or connection with stack.

49. No cast iron pipe shall be used as a soil or waste pipe which shall weigh less than the following per foot:—

2"	dia.	weight	4	lbs. per ft.	internal dia.
3'	"	"	6	" "	"
4"	"	"	9	" "	"
6'	"	"	15	" "	"
6"	"ex.	heavy	20	" "	"

All fittings used in connection with such pipe shall correspond in thickness and quality.

50. All cast iron, soil or waste pipes bends and fittings in connection therewith must be composed of the best clean gray metal, free from sand cracks, honeycomb, porous places, air holes, or other defects and shall be of uniform thickness.

51. All soil pipes, waste pipes and fittings used for exposed work shall be immersed in asphaltum or Smith's preparation. All sink pipes, waste pipe and fittings to be used underground shall be coated inside and out, with asphaltum or Smith's preparation.

52. The council shall from time to time, as occasion may require, appoint such Inspectors or Inspectors for the purpose of receiving applications and inspecting works and carrying out their duties as required by the provisions of this by-law, who shall be known as the Plumbing Inspector, but no person shall be eligible for such appointment, who shall not have passed a satisfactory examination for proficiency in both practice and theory of plumbing, and drainage; such examination to be conducted by such person or persons as the council may appoint.

53. Any person guilty of an infraction of this by-law shall upon conviction before the Mayor, Police Magistrate or any justice or justices of the peace convicting, pay a penalty of not exceeding the sum of $100 and costs, and in default of payment thereof it shall be lawful for the Mayor, Police Magistrate, or any Justice or Justices of the Peace, or any two or more of them acting together therein, then under the hand and seal of one of them to levy the said penalty with costs, or penalty or costs only, by distress and sale of the offender's "goods and chattels," and in case of insufficient distress to satisfy the said penalty and costs it shall be lawful for the Mayor, Police Magistrate, Justice or Justices of the Peace convicting, or any of them, to commit the offender or offenders to the common gaol or any lock-up house in the City of Vancouver, for any period not exceeding ninety (90) days, unless the said penalty and costs, or penalty or costs, be sooner paid, and all fees payable by any person under any section of this by-law shall be recoverable by the city in an action brought in any court of competent jurisdiction.

54. This by-law shall come into force and take effect from date of passing thereof.

55. This by-law may be cited as the Plumbing By-law.

56. Sections 72 to 87, both inclusive, of By-law No. 131 and By-laws Nos. 175, 188, 189, 245, 480 and 612 are hereby repealed.

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That this by-law shall come into force and take effect from date of passing thereof.

DURHAM SYSTEM EXPLAINED.

The Durham System is a system of piping large buildings with galvanized or tar-coated wrought-iron or steel pipe and recessed drainage fittings which are put together with screw threads. It is claimed that for large work this system has the advantage of greater strength of joints as it is impossible for them to work loose, as is frequently the case with joints caulked with lead.

Plain black wrought-iron pipe should not be used on account of corrosion. Both pipe and fittings should be either galvanized or coated with tar. The systems are the same in regard to the piping, the difference being merely in the method of installation. The fittings used are made especially for the purpose, having a recess so that when the pipe is sent home there will be a smooth continuous inner surface. The fittings are made with long curves so as to offer as little resistance as possible to the flow of water, etc., inside the pipes. While it might be thought that this system would support itself, it is bad practice not to thoroughly anchor the system. The vibration of the stacks will sooner or later spring the joints, causing them to leak.—Domestic Engineering.

DOMESTIC ENGINEERING LOGIC.

Any house anywhere can now have light, plumbing, sewage disposal and steam or hot water heating. The American inventor has made it unnecessary that a house furnished with these luxurious necessities shall be built in a town with gas works, water works and a sewer system. But plumbing, lighting and heating plants in detached country homes should be just as good as in city buildings. If of poor material and indifferent workmanship they contain the same elements of danger and discomfort. Wherever this kind of work is done it should only contain the best quality of material, bearing the maker's name and guarantee, and should be put in only by men of knowledge, experience and judgment.

Heating and Ventilating Apparatus in an Eight-Room School

C. B. Thompson, in The Plumbing Trade Journal, Describes a System to be Installed in a School—No Radiant Heat in Class Rooms—Air Recirculated by Gravity at Night—Simple and Effective Temperature Regulation by Hand—Electric Driven Fan.

The following specification, and the heating plans accompanying same, were prepared under the direction of one of the prominent steel plate fan blower manufacturers. They are presented here with the hope that they may be helpful to those members of the heating trade who have not had much experience in mechanically moved air for heating and ventilating. While the layout is not entirely orthodox or conventional, there is nothing of the freak about it; it is simply a common sense modification of the well-known principles of forced blast heating.

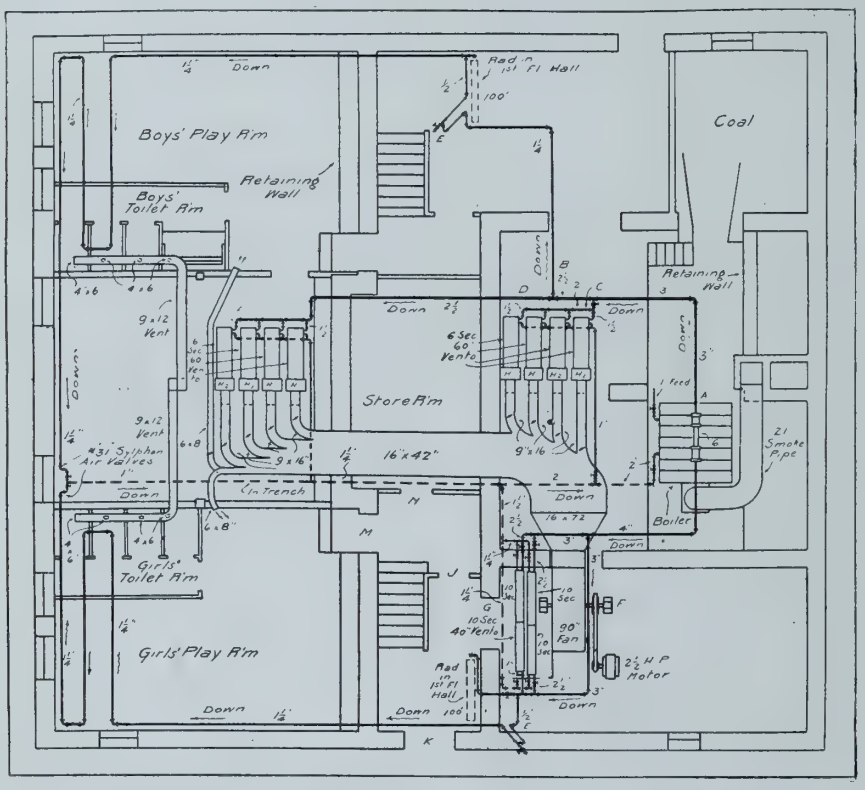


Fig. 1.—Basement Plan.

General Scheme of Heating.

The heating plan consist of two floor plans, basement (No. 1) and first floor (No. 2). Also five sketches. Figs. 3, 4, 5, 6, and 7, showing details of various parts of the installation.

The operation is as follows: In the morning, when the rooms are below the desired temperature, see that all stacks are filled with steam; then close the foul-air outlets by pulling out the deflector rods, open all school-room doors, and door J; close door K, and start the fan. This will have the effect of pushing the cold air out of the rooms through the open door, down the hall stairway to the fan, thus recirculating the air until the rooms have attained the desired temperature.

During school hours, open the foul-air outlets, close door J, and open doors K; run the fan as directed, and the fresh air supply will be of sufficient volume and temperature to comply with the New York State law. Doors M and N should always be closed.

Hand temperature regulation is secured by the adjustment of a chain which connects to a mixing damper located at the foot of the duct as shown in sketch 4. When the chain is pulled up to its limit, all the air must pass through the heating stack and will enter the room at maximum temperatures.

When the chain is down to its limit, all the air, after passing through the tempering stacks, will by-pass the heating stacks and enter the room at 70 degrees in zero weather. When the chain is midway, a mixture of air from the tempering and heating stacks will enter the rooms. These dampers may be operated thermostatically if desired. In mild weather any portion of the tempering stack may be cut out by closing the valves provided for that purpose.

When the school rooms are not occuppied, stop the fan, pull up the chains to the limit, thus closing the vents; close doors K, and open all other doors as described, and the air will recirculate by gravity, keeping the internal temperature between 50 and 60 degrees.

The corridor is warmed by two direct radiators, installed without valves of any kind. Valves on radiators in such locations are a useless expense, serving no useful purpose, and always getting out of order.

The play rooms for the girls and boys are to be heated by the exposed pipe along the ceiling. The steam for each of these coils passes through one of the 100 sq. ft. radiators in the hall above, so that one supply valve will answer for both radiator and coil, as both will be needed at the same time. To take care of the condensation in the main supplying this radiation, which would otherwise be pocketed, water seal E is provided which will allow this condensation to pass on into the heating coil, and thence to the return. Each of these seals is provided with a cock for draining it. Ventilation for these rooms is shown on basement plan (No. 1).

Working at maximum demand the air velocity in the rising ducts will be 800 feet per minute. The air will pass the diffusers into the room at 400 feet per minute—a little faster than a brisk walk. The diffusers, however, at once scatter the air to all parts of the room, and the air currents will not be perceptible six feet from the inlet. If the air enters the school room much below a velocity of 400 feet per minute, it will not circulate freely through a large room.

Direct radiation is not used for the school rooms because the radiant heat, which has an affinity for solid bodies only, is likely to give the children headache, unless the radiators are surrounded by a casing. Nothing is more healthful and invigorating to the occupants of a room than plenty of fresh warm air. This can be provided positively and in any predetermined quantities by one method only, and that method is the forced blast system of heating and ventilating.

Principle of Construction.

The apparatus shall be constructed as a low pressure steam heating apparatus, operating by gravity, and the alignment of the pipe lines shall be such as to insure free circulation of steam throughout the entire system. Each unit or por-

tion of the apparatus must be so arranged as to admit of its being cut out without interfering with the circulation of steam or water through any other part of the system.

Boiler.

The contractor will furnish complete and set up in basement where designated, one cast-iron steam boiler containing 21 square feet of grate and 280 square feet of heating surface, capable of vaporizing with a good draft, 1,400 lbs. of water per hour. Boiler to be equipped with automatic draft regulator, steam gauge, water gauge, safety valve, fire tools, and cleaning brush; he will also furnish 1-inch feed and 1½-inch blow-off cocks and connect same to water supply and sewer connection. The feed and blow-off must be Jenkins Bros. diamond gate valves, with lock shields and two keys to each valve.

Boiler Connections.

The boiler connections must be exactly as shown on the heating plans. The steam supply connection to consist of a 6-inch yoke connected to boiler dome by two 6-inch risers. To each end of the reducing tees the two main supply pipes are attached, all as shown in elevation, Fig. 6, and on Plan No. 1.

Foundation and Smoke Flue.

The school board will provide a suitable brick or concrete foundation for boiler, also an adequate and properly located chimney flue of ample area and height.

Smoke Pipe.

The contractor will connect the boiler to chimney with black sheet iron smoke pipe of No. 14 U. S. gauge of same size as the pipe collar on smoke hood of boiler. A hinged cleanout door 12 x 12 inches shall be provided in the smoke pipe.

Pipe and Fittings.

Pipe and fittings to be of best quality and of the size shown on the heating plan No. 1. All joints to be iron to iron and steam tight; horizontal pipes to be properly graded so there will be no water pockets. In making up the joints, use oil on the male thread only. Do not use red lead or any other pigment with the oil.

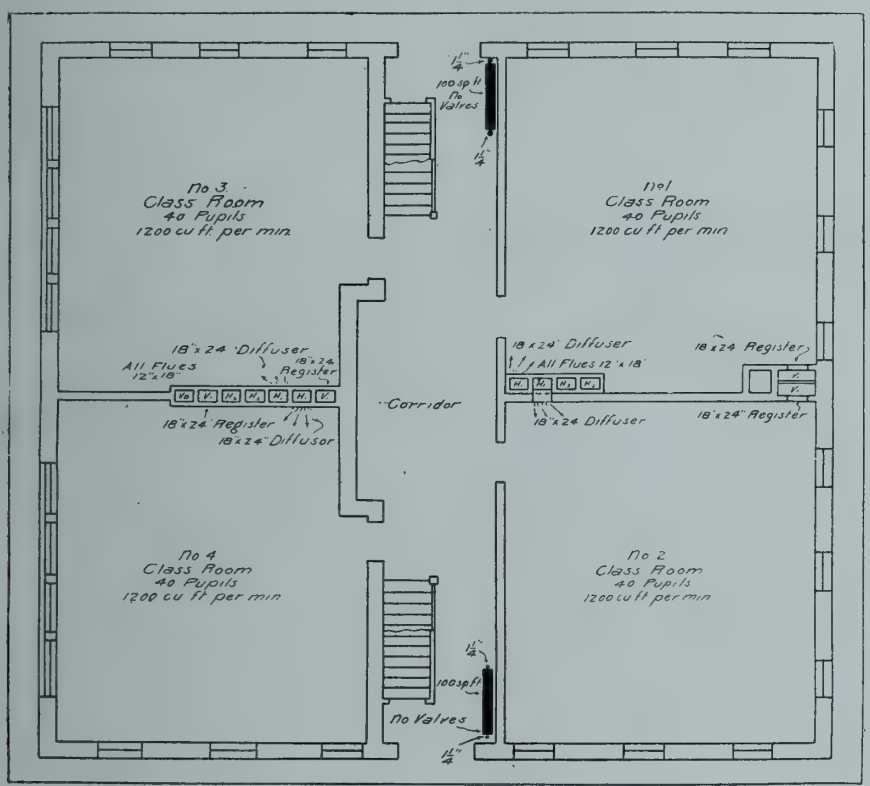


Fig. 2.—First Floor Plan.

Hangers.

All pipe lines in basement to be supported by neat, strong hangers, fastened to timbers overhead by lag screws. The main return is to be covered and laid in a trench covered with cast-iron trench plates, as shown in sketch, Fig. No. 3.

Sleeves.

Where pipes pass through floors or ceilings, the openings will be fitted with galvanized iron sleeves and heavy cast-iron floor plates.

Painting.

All radiators and exposed pipes above cellar, and all the air diffusers and screens, are to be painted plain (two or more coats) with good oil paint or radiator enamel to harmonize with the adjacent woodwork.

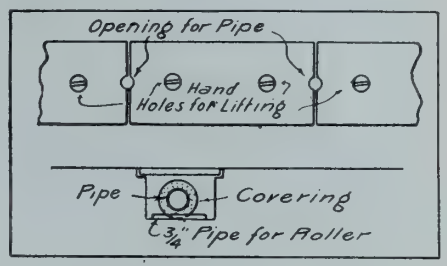


Fig. 3.—Trench Plate and Section of Trench.

Vento Tempering Stacks.

Furnish and install four stacks of ten sections each (40 sections) of Vento 40 inches high, set vertically as shown on plan No. 1. These stacks are to rest on a brick or iron platform.

Vento Heating Stacks.

Furnish and instal eight stacks, two deep and three wide (48 sections) of Vento 60 inches high. These stacks to lie in a horizontal position and to be supported as shown in Figs. 4 and 5.

Direct Radiators.

The direct radiation shall consist of two 20-loop 38-inch 3-column cast iron steam sections to be placed in the corridor as shown on plan No. 1. These two radiators are to be installed without steam inlet valves and without air valves. The air will discharge at the end of the steam lines.

Housing and Air Ducts.

The housing for the tempering coil shall be of No. 18 black steel. The housing for the eight heating stacks shall be of No. 26 galvanized iron. The top and bottom of the main air duct shall

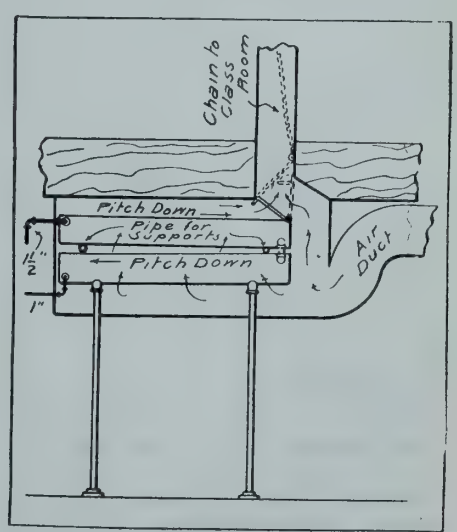


Fig. 4.—Side Elevation of Heating Stacks.

housing for the eight heating stacks shall be of No. 22 galvanized iron, the sides of No. 24. All branch ducts and all fresh and foul air flues shall be of No. 26 galvanized iron.

Steel Plate Fan.

Furnish and erect on a substantial brick and concrete foundation one 90-inch steel plate fan with top horizontal discharge, and fitted with outboard bearings to prevent vibration and noise; fan to be equipped with suitable pulleys.

Electric Motor.

For driving the fan, furnish and erect on substantial foundation, one 2½ h.p. electric motor, wound to suit the current used in the school, together with one "Cutler-Hammer" regulator, and all the necessary drive belts to make the attachment to fan complete. The electric wire connections will be furnished by the school board.

Rising Flues.

The eight class rooms in the building shall be furnished with galvanized iron heat flues for conveying the warm air from the main duct in the basement to the first and second floors in the building. These flues shall be of the size shown by the plans, made of No. 26 U.S. gauge galvanized iron, and shall be supplied with circular deflectors at the top so that the air will move freely from the main ducts into the rising flues and into the school rooms.

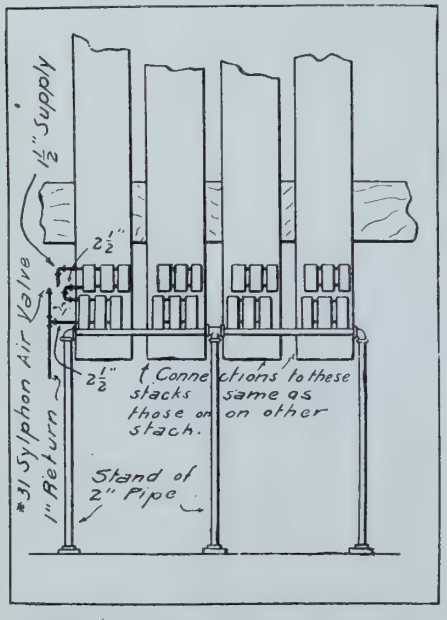


Fig. 5.—Front of Heating Stacks.

There shall be furnished and placed in position six galvanized iron exhaust flues for removing the foul air from the four new class rooms, and the two class rooms which are on the second floor of the old building. These flues shall be made of No. 26 U. S. gauge galvanized iron, and shall extend from the floor of the school rooms to a point six inches above the attic floor.

In the old building is a vent flue which may be utilized to vent two rooms on the first floor, if it is found practical to place a partition in it for its full length; otherwise, it will serve only one room, and a separate flue should be provided for the other room. Ducts marked H1 are hot air ducts leading to the first storey, and those marked H2 lead to the second storey. Vent flues are designated by Vb, V1 and V2, according to whether they take their air from the basement, first or second storey. Vent registers are located just above the baseboard, while the vents from the toilet rooms are near the ceiling.

Each hot air duct for the first storey discharges the air eight feet above the

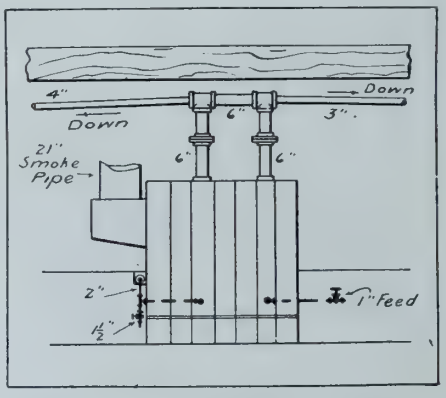


Fig. 6.—Side Elevation of Boiler.

floor, and there the duct stops, but in its place or position in the second storey a vent flue, the same size commences and extends to the attic. As no plan for the second storey is furnished, the vents for the second storey are not shown. All other ducts are shown.

Air Diffusers.

Instead of wire screens for covering the warm air inlet, use air diffusers with vanes so the currents of air can be directed to any part of the room.

Foul Air Outlets.

The openings for the escape of foul air are to be covered with a register face, wire screen being preferable. Back of the screen, place a deflector plate operated with a rod so that in warming the rooms in the morning the foul air ducts may be closed by pulling out the rod. When this is done and the fan is started the air in each room will pass through the open door down the stairway to the fan, and be recirculated until each room has attained the desired temperature.

Toilet Room Ventilation.

Furnish and place in toilet rooms, in directed position, a galvanized iron ventilating flue made of No. 26 U. S. gauge;

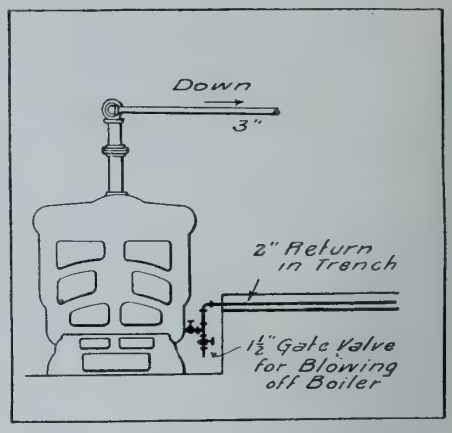


Fig. 7.—Front Elevation of Boiler.

extend same through roof and surmount with a ventilator 17 inches in diameter.

Ventilator.

Furnish and place in position as directed one ventilator 48 inches in diameter, with roof flange. This ventilator will discharge the foul air from the school rooms.

Air Valves.

The four tempering stacks, the eight heating stacks, and the ends of the pipe lines are to be fitted with Syphon Standard Air Valves, No. 31, with a ¼-inch straight shank, attached as shown on sketches.

Gate Valves.

Jenkins Bros. diamond brand gate valves are to be placed on the steam and return lines at the boiler, on the steam inlet and return of each of the four tempering stacks on supply line to direct radiation, and elsewhere if shown on the heating plan.

Pipe Covering.

All steam and return pipe in the basement, except the pipe in the toilet rooms, to be covered with sectional abestocel covering, the fittings covered with plastic asbestos to bring the surface flush with the sectional covering; cotton to be pasted over the cement when dry, and all the covering given two coats of fireproof paint.

Boiler Covering.

The boiler to be covered with plastic asbestos two inches thick, molded on wire netting, leaving an air space of two inches between the surface of the boiler and the inner wall of the covering. The smoke pipe to be covered in the same manner except the clean-out door.

Cleaning and Testing the Apparatus.

When all the stacks, radiators, and piping are connected to the boiler, use positive pet cocks in place of the automatic air valves while washing out the apparatus.

Before the flanges are made up, place in boiler through one of the steam tappings, five pounds of concentrated lye. Make all tight and fill the boiler with water, after closing the return valve to boiler and opening the blow-off valve. Start a strong fire and, after the water has boiled for an hour or more open the feed cock and force the boiling water through the system.

Keep up a brisk fire so the water in the boiler will be close to the boiling point, and run this hot water through the sytem until it runs clear at the blow-off. This operation should occupy the best part of a day, but it will clean out of the boiler, piping, and radiation all oil, dirt, grit, etc., which causes so much trouble in priming, stoppage of air valves, and general annoyance.

When the system is properly scoured out, and the water in the boiler is perfectly clean, draw the water down to the normal water line, and test all the piping and stacks with 20 pounds steam gauge pressure. When all is tight, replace the pet cock with automatic air valves. All this testing and cleaning must be done before the housing is placed on any of the stacks.

The proportions of the apparatus described in the foregoing specifications are arrived at as follows:—The heat loss through walls and windows is computed by the German coefficients of heat loss, expressed in terms of British thermal units.

This loss is approximately 240,000 B. T. U. per hour for the eight rooms, when the external air is 20 degrees below zero. The largest room will loss 550 B. T. U. per minute, and to offset this loss, 1,200 cubic feet of air must drop in temperature 25 degrees in one minute. Since the air in the room must be maintained at 70 degrees, the air must enter at 70 plus 26—or 96 degrees to offset the heat loss and maintain the standard temperature of 70 degrees.

As a factor of safety the apparatus is designed so the air will enter at 106 degrees. The tempering stack will warm the air from 20 degrees below zero to 54 degrees above, at which temperature the air reaches the warming stack at the foot of the rising ducts. These stacks add 54 degrees, making the terminal temperature entering the room 106 degrees. All the computations are made for 20 F. degrees below zero.

The size of class rooms 1 and 2 on the first floor and the rooms above them on the second floor is 24 feet x 26 feet x 11.9 feet high. Each of these rooms contains 144 square feet of glass and 443 square feet of of exposed wall. Class rooms 3 and 4 on the first floor and the rooms above them on the second floor are 24 feet x 26 feet x 11.9 feet high, and contain 208 square feet of glass and 379 square feet of exposed wall.

* * *

In the foregoing specification, special attention is called to the section referring to the washing out of the apparatus. This is a clause that seldom, if ever, appears in a heating specification, and yet it is a most important one.

Washing out the boiler alone is not sufficient, because there is always a certain quantity of oil, tapping compound, and other foreign matter in the piping and radiation, which in time works down to the boiler, causing foaming, unsteady water line, and priming—for which the boiler usually gets the blame.

Then, too, delicate automatic air valves are placed on radiation and, after a few days, they become inoperative, because of the lodgment of some foreign matter under the needle valve or elsewhere. If a little time were spent in washing out the entire apparatus as described in this specification, a great deal of annoyance might be avoided and time and money saved.

Various Types of Refrigerating Machines

Joseph H. Hart, in Cassier's Magazine, Explains How the Exhaust Steam of the Power Plant May be Employed in the Evaporation of Ammonia.

Mechanical refrigeration is a branch of engineering familiar to many but understood by few. Its present position in the engineering world and the changes which are constantly going on not only in regard to relations between its various divisions and their relative efficiency but also in connection with outside engineering developments, are little understood. The general status of mechanical refrigeration has changed to such an extent within the last decade that it presents practically a new science to the engineer. As a general statement we can say that all refrigerating machines may be classified into three groups: those employing air as a refrigerant; those employing the mechanical phenomena of absorption and solution of ammonia by water; and those using liquefiable gas.

There is one other type generally recognized as thorougly inefficient which is in existence to-day in some minor plants, viz., the vacuum process. In this water vapor is withdrawn rapidly from the space above the surface of the water and the production of new vapor which is in turn removed, absorbs the heat of liquefaction from the water thus producing ice. It is in reality a subhead under the liquefiable gas machine in which the liquefaction is of minor significance and unnecessary. However, this machine exists to-day only in small isolated units and the remarkable mechanical inefficiency of the removal of the water vapor is responsible for its present position.

The Air Machine.

Now the air machine is clean and odorless and is somewhat in use on shipboard. It utilizes the process known as balanced expansion, whereby the air is cooled by doing work in a cylinder. Its size, weight and cost, and large consumption of power are serious drawbacks to its wider use and it is now recognized that its field is limited to places where the use of other types is prohibited.

The absorption machine has a rather complicated mechanism. There are no moving parts except a small slow speed pump and it possesses a distinct advantage on this account. Its agent is ammonia and it was generally regarded up to about the year 1895 as an extremely inefficient process.

The liquefiable gas machine was considered the most efficient, the simplest, and most convenient. A gas was liquefied by mechanical compression, followed by cooling, and this liquid was then allowed to evaporate and absorb its latent heat of liquefaction from surrounding bodies and the process was made continuous. Ammonia, sulphur dioxide, ether, methylchloride, gasoline and carbon dioxide, and any one of an even larger number of what are known as volatile liquids have been used. From theoretical considerations and practical details combined, it has been shown conclusively that ammonia is probably the best substance for the conveyance of heat in refrigeration and the majority of compression machines to-day utilize this material, although carbon dioxide, on account of its physical properties and diminished cost, has replaced it to a certain extent in some of the smaller units.

The Absorption Process.

The absorption machine, so-called, which utilized water in conjunction with ammonia gas, was the first practi-

cal refrigerating machine; but later came into considerable disrepute on account of its remarkable inefficiency. The gas is produced from the aqua ammonia by steam coils in a generator somewhat similar in construction to the modern boiler. The pressure was increased by means of heat until the gas could be liquefied with cold water and it was then evaporated in a manner identical to that of the ammonia compression type. The expanded gas instead of being conveyed into a compressor as in the latter system was absorbed by cold water or weak aqua ammonia. This system requires five distinct units: the generator, where the gas is produced; the dehydrator, where the excess water vapor carried over by the gas is condensed and removed; the condenser, which consists of pipes having cold water flowing over them and in which the gas is changed to ammonia liquid; the expansion coils or shell cooler, in which the refrigeration is produced; and the absorber, which absorbs the gas back into the weak aqua ammonia, completes the process. Further an ammonia pump must be installed to force this liquid back into the generator, thus making the process continuous. The compression system, on the other hand, utilizes simply a compressor and condensor and the refrigerating apparatus or shell cooler. This mechanical compression type was formerly superior although it depends on the operation of a compressor which is mechanically of low efficiency. Both types of machines, however, are dependent for their efficiency upon design to an extent which was not realized until recently and the situation exists to-day that the absorption system is the superior in many ways when used in large units.

Value of Design.

As an illustration of this latter point it can be cited that the absorption system has its efficiency limited directly by the action of the dehydrator. If water vapor is carried over with the gas and not separated, it condenses in the condenser in the production of liquid ammonia and combines there directly with it, forming strong aqua ammonia; the refrigerating power of the ammonia being counterbalanced by the heat of combination at this point. Thus the entire problem in the absorption system depends upon the design of the generator and its efficiency in producing rapidly comparatively pure ammonia gas without water vapor and upon the efficiency of the dehydrator in removing the residue of the water vapor before it becomes objectionable. The design of the absorption system was not fully studied until within the last decade. Both types of machine depend absolutely for their efficiency on their design. An absorption plant may operate with the production of no refrigeration and a compression plant may do the same, the result being due to faulty design in both cases.

How Absorption Works.

The absorption machines employs the heat in the steam for the production of the ammonia gas from the aqua ammonia. It thus utilizes the latent heat of vaporization of steam, and high-pressure superheated steam increases the efficiency but slightly. A compression type utilizes the expansive force of steam only and hence superheated compound condensing engines are the rule in large installations of this type. Thus we come to the anomalous condition that the absorption machine can utilize exhaust steam very efficiency, whereas the compression plant has its best efficiency with high-pressure superheated steam, and does not utilize the heat of the exhaust at all. The claim is often made that the absorption machine requires more heat in its operation than the compression plant, and while this is true, when the quantity of heat taken from the boiler is considered the absorption system is much superior. Thus in large units—in the production of ice, for example—a compression plant operates generally on an 8 to 1 basis: that is, 8 tons of ice produced to 1 ton of coal consumed. An absorption system under the same conditions can operate on an 11 to 1 basis, whereas a combination plant of the same total capacity for compression and for absorption, the exhaust steam from the compressor operating the absorption system will operate on a 14 to 1 basis. These figures in general have a 50 per cent. range of applicability, depending upon maintenance of plant and method of operation; but there is no doubt, in large units of 100 tons' capacity or more, that the absorption system, or better, a combination plant, is much superior. This is in complete contradiction to the generally accepted opinion ten years ago, and is due to improvement in design of the absorption system whereby the exhaust steam can be utilized efficiently and in which heat waste has been comparatively eliminated.

A Remarkable Condition.

This brings us to a remarkable condition in the engineering field. It shows a further application of the utilization of exhaust steam never before seriously considered. Exhaust steam has been used generally for heating purposes and in some isolated cases for drying various materials. Its application to mechanical refrigeration in power-plant production has progressed to a certain stage. It has been generally recognized that such units as the lighting or trolley systems have excess loads in the morning and evening. Formerly this was taken care of by storage batteries but their rapid deterioration and general cost of maintenance was such that it has been found preferable to operate a full size plant for the load at maximum. This is due partly to the increased efficiency of large plants and to the necessity of a choice between two evils. This latter situation presented a large excess power available at slack time and this excess has in some cases been sold to small refrigeration consumers operating their own plants. Mechanical refrigeration possesses this further advantage in this field. It can be operated intermittently. Thus by the use of a large brine storage tank refrigeration can be produced in the brine and kept there for long periods of inactivity with small waste and utlized when wanted. Thus the power plant in its development has aided the development of a large number of small unit refrigerating systems by the furnishing of sufficient power at minimum cost at irregular intervals.

Mechanical Refrigeration.

Further, owing to the ability of mechanical refrigeration to operate intermittently and in reality to take the place of the storage battery in the storage of energy, it has found a place in the modern plant. Thus many small trolley and lighting systems operate a refrigerating or cold storage plant as well. The excess current being turned into refrigeration when not needed and the cold brine carrying this system over the inactive period when power was needed along other lines. This has proved extremely efficient, and in many of the smaller cities such plants are in active operation.

The advent of the absorption system with its remarkable increase in efficiency threatens to produce a change in the present conditions. Modern power plants in large units require complicated prime movers using superheated steam and generally of the compound condensing type whose cost of maintenance and high first cost is often almost prohibitory. The absorption system cannot use efficiently high-pressure superheated steam. The compression plant itself is inefficient in the production of refrigeration. Hence, it, in turn, will be displaced for large units, and we shall have the rather anomalous condition of large refrigerating concerns with excess power for sale, using simply plain slide-valve engines of low efficiency and large steam consumption. Such a plant could sell power as a by-product in quantities and at prices such that the ordinary unit in this field could not compete. Further,

the modern power plant has an additional by-product available in the utilization of its exhaust steam in the production of mechanical refrigeration. The interrelations between these two engineering developments are at their inception and time only can develop the exact situation. However, conditions are such at present as to point almost conclusively to a radical change in their interrelations and a complete innovation in the production of power.

Letters from Correspondents on Trade Problems

The Editor Invites Short Letters and Sketches Describing Problems Met With or Original Methods of Doing Plumbing or Heating Work—Name of Writer Required, Though Not Necessarily for Publication.

BIOLOGICAL SEWAGE DISPOSAL.

Editor Plumber and Steamfitter,—In the Plumber and Steamfitter of Aug. 2, I dealt with the fundamental principles underlying this method of disposal and the methods employed. It is my intention in this article to describe in detail a plant suitable for a single house. This plant may be taken as a typical example of small installations and may be expanded for such service as hotels or a group of houses.

As I mentioned in the first article such a plant generally consists of a septic tank and one or more filters, and the reasons for using a septic tank in preference to a sedimentation were given.

The first question that arises is the quantity of sewage to be dealt with. This will be practically the same as the amount of water used in the place. To ascertain this quantity all available data should be examined and used in conjunction with the designer's experience. In our example we will assume a summer house with the number of inmates varying from 6 to 12. The house will have a bathroom (basin, bath, and closet) and a kitchen sink. The water supply will be obtained from a tank and windmill, or engine and pump. If the "modern conveniences" have been installed first and the disposal plant is an afterthought the quantity of sewage may be obtained by measuring the water supply from the tank. We will assume that we will have 50 gallons per capita per day to deal with. The sewage should not remain in the tank too long or it is afterward hard for the beds to treat. Our average quantity of sewage would be 9x50 plus 450 gallons per day. The tank should hold about a 20-hour flow or

$$\frac{450}{1}\times\frac{20}{24}$$ or 375 gals., which is equal to

$$\frac{375}{1}\times\frac{4}{25}=60$$ cubic feet.

Our tank will, therefore, have a capacity of 60 cubic feet, which will give with 12 people a 15-hour flow, and with 6 people a 30-hour flow.

The size of the dosing chamber is regulated by the size of each dose which in turn depends on the size of the filter and the frequency with which it can be dosed without injury. The material from which your filter is made practically decides the size and frequency of dosing of your filters. If the fiber is to be of ordinary sandy loam you will need an acre for every 1,000 to 5,000 gals. of sewage. The nearer the soil approaches sand the more it will filter. If the filter is of sand it will handle from 35,000 to 65,000 gallons per acre per day, depending largely on the quality of sand and sewage. If clinker or pea gravel are used or broken stone not larger than 1 inch, the filter will handle from 500,000 up to 1,000,000 gallons per acre per day. We will suppose our filter to be made up of coarse lake sand of which there is an abundance to hand and that the bed has therefore to be built. The base of the filter will have to be graded and field tile laid in the depressions to carry off the effluent. Four-inch tile will be large enough, and they should be covered with gravel and their joints wrapped with cheese cloth to prevent dirt from entering. The area of the bed will now be decided on. We must design for our maximum flow which will be 600 gals. per day. This will happen mostly between 8 a.m. and 8 p.m., or in 12 hours. As our sand is coarse we will see what area will be required, assuming 1 acre to filter 60,000 gals. per day, this will be

$$\frac{600}{60000}\times\frac{4840\times9}{1}=435.6$$ square feet.

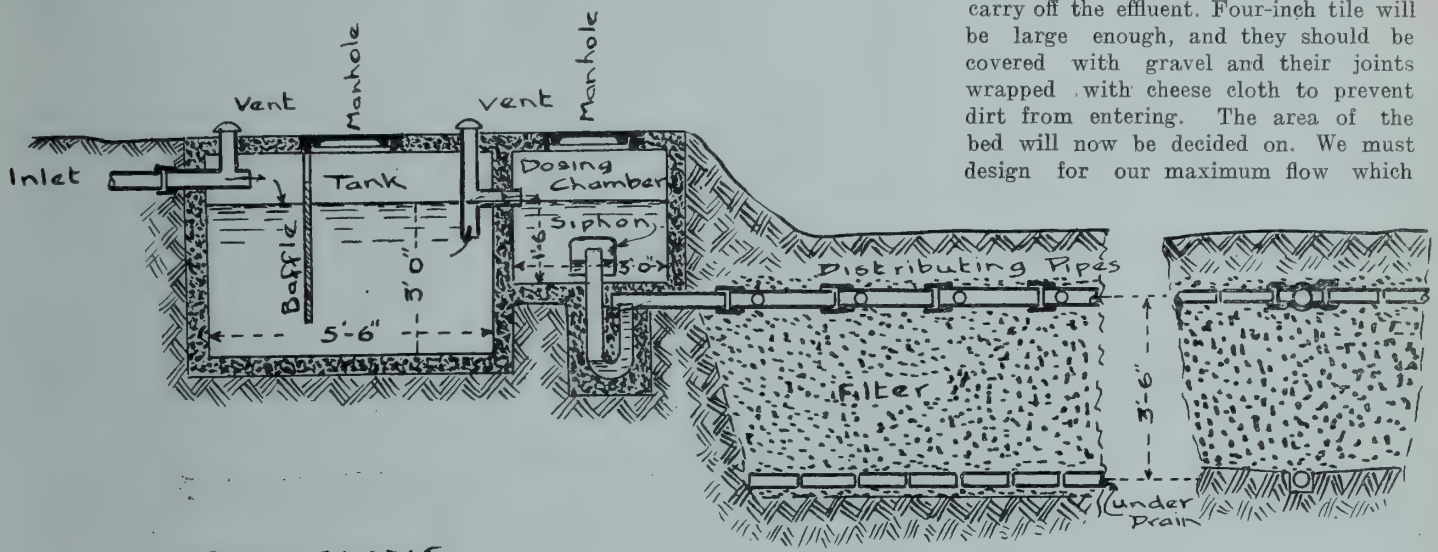
The filter could be dosed at least once every 2 hours. We have therefore 600 gallons=

$$\frac{600}{25}\times\frac{4}{1}$$

or 96 cubic feet to be taken care of in six doses or every alternate 12 hours, as in the evening the filters will be resting. Each dose will therefore be

$$\frac{96}{6}=16$$ cubic feet

which will be the capacity of our dosing chamber. We will use 3-inch field tile, laid 2 centres for distributing the



SECTIONS Through SEWAGE DISPOSAL PLANT

Scale 4'=1"

sewage on the beds, with a 4-inch glazed tile to act as a main carrier. This latter will be made up of T's which will give two lines of distributing tile every 2 feet. The shape of the bed will of course govern the plan of laying your tile, but where the beds have to be built the above is a compact method. The area of a 3-inch pipe is approximately .05 square feet, and that of a 4-inch pipe .09 square feet. Let us suppose our branches to be 10 inches long either side of the main carrier, then for each T we will have 20 feet of 3-inch pipe and 2 feet of 4-inch. It will ensure equal distribution if the tiles are first filled by the dose, when each part of the bed will get an even amount. 20 ft. of 3-inch and 2 ft. of 4-inch pipe hold 1.00 X .18 cubic feet. Each dose is of 16 cubic feet, therefore, we will need

$$\frac{16.00}{1.18} \times 2$$

feet of 4-inch tile or 27.1 feet. As the tile is in 2 feet lengths we will take 14 T's or 28 feet of 4-inch tile, and therefore 280 feet of 3-inch tile. Our bed is 28 x 20 feet or 560 sq. feet in area, which is well within the limit of 435.6 that gives 60,000 gallons per acre per day.

We now know the size of our dosing chamber so that we can decide on the size of our tank, which must hold 60 cubic feet. Of this 60 cubic feet 16 is used for a dosing chamber. A tank 5 ft. x 4 ft. x 3 feet will give a foot above the surface of your liquid and hold 45 cubic feet, which is one cubic foot in excess of what we need in the main part of our tank. Our dosing chamber which holds 16 cubic feet, can be 3x3 feet and 1 foot 9¼ inches deep, which will give a capacity of 16 cubic feet. In the dosing chamber some automatic discharging device should be placed which will discharge when the tank is one inch 9¼ full and draw all the sewage out. A 3-inch miller's siphon will be found to answer the purpose, and give good satisfaction. The inlet should be baffled off with 2-inch planks, placed 1 foot 6 inches from the end of the tank. The effluent into the dosing chamber can be drawn off by a bent pipe or T as shown in accompanying drawing. The T allows for ventilation, if it is found advisable to have tight manholes. There should be two manholes, one in each compartment, to allow of cleaning and inspection. The tank can be built of brick or concrete. In either case a coat of cement plaster ½-inch thick should be applied inside and out, and when that is set a coating of neat cement slush should be applied with a brush. The latter on the inside only.

In laying the tile for the filter, the tile to the bed should have a fall of at least ¼-inch to the foot, or 2½ per cent. Then after reaching the bed a fall of 1 per cent. The distributing tile should be laid flat and it is a good plan to lay the same on a line of brick. They should be covered at the top by gravel or a piece of split tile to exclude the dirt. The ends of the distributing tile should be blocked with a brick and several may be turned up and the top left open to the air a small covering being provided to the dirt. This, while not necessary, gives a good supply of air to the beds. The end of the main tile should be turned up in a like manner whether the others are or not. The sub-drains should have a grade of at least 2½ per cent. and for this bed two lines will be found sufficient.

Where there are no "modern conveniences" in the house the "slops" may be disposed of by having a galvanized can connected to a filter bed. This can should have a cover and be provided with a strainer. The opening to the bed should be stopped till enough liquid has accumulated, when it is opened and the liquid discharged into the bed. If this is done three times a day no nuisance will arise. The screenings should be buried. If ordinary soil is used it would be well to dose the filter twice a day at the most.

E. DEAN WILKES, B.A. Sc.

Toronto, Aug. 17.

SEPTIC TANK CONSTRUCTION.

Editor Plumber and Steamfitter,—Will you give any information you can in regard to Septic Tanks, which are sometimes used where the soil is such that a cess-pool is not practical. I would also be pleased to learn of a firm who handle these tanks.

H. W. STOREY.

Francis, Sask., Aug. 24.

The Dominion Flushing Valve Co., 461 Dovercourt Road, Toronto, make a valve for use in septic tanks which is generally used throughout Canada. The tanks themselves have to be constructed locally. In this issue is an article on sewage disposal by Mr. Wilkes, while any interested can secure from the Flushing Valve Co., a very instructive article on the construction of septic tanks reprinted from this paper.—Editor.

COLD STORAGE BUILDINGS HEAT PROOF.

The modern theory of successfully insulating buildings for cold storage and other purposes is based upon entrapped air—air that is actually dead. This means that the air must be in sealed spaces and that the spaces must be minutely small—otherwise the essential idea of "still air" is overthrown The insulation must depend for its entrapped air upon the interstices or cells of the material employed rather than upon alternate layers of solid insulation and air spaces.

This new principle of insulation, which does away with double walls with air spaces between has brought into vogue solid insulations, says "Cement Age." In this type the protection consists of layers or blocks of various materials set in Portland pitch cement directly against brick or concrete walls and protected on the inside surface by plaster or tile. The space occupied by solid insulation is much less than that utilized by the older construction. If a fireproof or slow-burning material be used in making the insulation, the fire risk is greatly reduced.

The materials available for this so-called "solid" method of insulation are chiefly cork and compressed mineral wool blocks.

Cork, by virtue of its state and apparent use for which nature intended it, lends itself admirably to insulating purposes. In cold storage work, cork is efficient as a non-conductor of heat, is free from capillary attraction, and has no tendency to absorb moisture freely. When used as cork boards it is granulated, compressed in iron moulds, and baked while under pressure, its own natural gum being liquefied by the heat and uniting the granules into solid blocks. These have structural strength and are quite fireproof.

NATIONAL M. P. A. OFFICERS.

President, J. A. Gordon, Montreal; Vice-President, Joseph Laurier, Montreal; Treasurer, Harry Mahoney, Guelph; Secretary, H. W. Munday, Montreal.

Provincial Vice-Presidents — Ontario, George Cooper Toronto; Quebec, Jos. Thibeault, Montreal; Nova Scotia, F. Dexter, Truro; New Brunswick, D. J. Shea, Fredericton, Manitoba; A. J. Hammond, Winnipeg; Alberta and Saskatchewan, E. J. Young, Calgary; British Columbia, A. C. J. Weeks. Vancouver.

Chairmen of Committees—Sanitary, P. C. Ogilvie, Montreal; Legislative, H. A. Knox, Ottawa; Apprentice, James Griffin, Montreal; Essay, H. L. Chandler, Ottawa.

The building committee of the Board of Governors of the School of Mines, Kingston, decided to accept the plans prepared by Power & Sons, architects for the new metallurgy and chemistry buildings to be erected on upper campus.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

T. Fleury, plumber, St. Joseph, Que., has asigned.

Albert Primeau, a Montreal plumber, has assigned.

The plumbers and painters of Victoria enjoyed a joint picnic on August 28.

Hurst & Caldwell and Morgan & Elkins, two Vancouver plumbing firms, dissolved recently.

Scott & Bennett, Galt, are working on a fire protection system for the opera house at that place.

Pfeiffer & McVeigh, who have carried on business as plumbers in Calgary for some time have assigned.

Jas. Ballantyne, Montreal, will do the plumbing and heating in the new Central Union station building at Ottawa.

Cooks, Potts & Smith, plumbers, Regina, are succeeded in business by Potts & Smith, Mr. Cooks having retired.

The Hick Hardware Co., Lethbridge, has the contract for plumbing in the new Westminster school being built at that place. The contract is worth $6,590.

T. A. Murray, the Saskatchewan Government's expert inquiring into Regina's sewerage conditions, says the sewers are too small, are improperly laid and are generally inadequate.

The Westmount Plumbing & Heating Co. have been awarded the contract for installing the plumbing and heating in the additions being built to St. Stephen's church, Montreal.

A jolly crowd of over 600 went on the annual excursion of the Toronto Plumbers' and Steamfitters' Union on August 21, to Berlin. They were treated to a good programme of sports.

The G. T. P. recently awarded to B. S. Sturtezant, of Minneapolis, the contract for the instalation of heating apparatus in the round houses at Edmonton, Wainwright and Biggar.

E. S. Hubbell & Sons, hardwaremen, Thamesville, Ont., have the contract for the plumbing and heating work in the new Merchants' Bank, at that place, and are making good progress with the work.

T. Lessard & Sons, Montreal, have the roofing, heating and plumbing contracts at the St. Charles R.C. school, being erected at Point St. Charles. This firm has also the contract to do similar work in Chas. F. Skelton's flats at Montreal.

McKelvey & Birch's plumbing shop at Kingston was badly scorched inside by fire on August 29, involving a loss of $1,000. The shop was fully insured. Spontaneous combustion originating from oiled waste in a tool chest was the cause.

Simmons Bros., hardwaremen, Kingston, were awarded the contract for the sanitary improvement of the county jail—the work of plumbing, putting in baths and lavatories, and the installing of hot and cold water. The contract was given this firm for $1,127.

Bernhardt & Gies, Preston, have the hot water heating and plumbing contracts in the new Carnegie Library Library now being built at that place. The heating contract is worth $1,030 and the plumbing $95. Lockhardt & Co., Galt, will do the electric wiring at $65.

There has been quite a shifting about in Chatham, Ont., plumbers' offices. R. H. Jones, formerly of Arntfield & Jones, has moved to the other side of Lacroix Slip, taking the office formerly occupied by Bell & Conwright. The latter firm has dissolved. C. R. Bowers has taken the old Arntfield & Jones office, and made some improvements.

D. Turner, secretary-treasurer of the Turner Co., of San Francisco, plumbing, heating and ventilating contractors, has bought property in Prince Rupert. He secured two lots on Third Avenue, near Sixth Street, for $7,000; two lots on the corner of Third Avenue and Eighth Street for $5,250, and one lot on Eighth Street, for $250. He will erect a building on his corner property.

The Vancouver Steam Heating and Supply Co. were given a tentative fran-

THE MONTREAL CONVENTION.

It is very unfortunate that the work of the Montreal Executive in making adequate arrangements for the forthcoming convention on Sept. 15 and 16, should be held back by the uncertainty as to how many members are likely to attend. Although Secretary Mundy sent out a letter on Aug. 16, asking the various Pro. Vice-presidents to let him know how many master plumbers in each district would be likely to attend, only one or two replies have been received up to now.

The executive are, therefore, working in the dark, and it is impossible to map out any programme. It is of no use making arrangements until the executive have some idea as to the numbers coming, and as to whether the meeting will be like that of last year, an executive one or a full convention. As Secretary Munday said, "This lack of information is keeping us back. We cannot do much until we know how many are likely to come."

This holding back on the part of the Master Plumbers of Canada is not only very disappointing to the Montreal executive, but, in the light of their action in again inviting the Convention to their city, is somewhat discourteous to say the least of it. Surely now, if at any time, plumbers should rally to the help of the Montreal men, and show by their attendance that the invitation, for the third year following, is appreciated.

The Montreal Executive have chosen a good time—there could be none better. The city will be alive with excitement, owing to the Old Boys Week. Public amusements are being planned for almost every hour of the day, while cheap rates are being given by the railroads. A better opportunity for attending a convention could not be afforded. And the Montreal Executive are keen on doing things well this vear, and if posible to beat previous efforts.

Give them a chance, therefore, Master Plumbers. Show them that you appreciate their efforts on your behalf. This is the third time running, and demands official recognition at your hands. For the honor of the association, the Montreal men should be thanked in the only way they want to be thanked, that is by a large attendance at the convention.

Let your vice-presidents know at once that you are going to attend so that the Montreal Executive can get on with the work. A good programme cannot be arranged in a day. Do not, therefore, keep things back any longer, but let the Montreal Executive know that you are attending, and give them a chance of doing things in a way they like to do, and in a way that we, from past experience now expect them to do. Nothing has been arranged up to now, and cannot be until more definite information is known as to the numbers coming. Give the Montreal Executive a chance.

chise for thirty years, a few days ago, by the board of works, whereby the company will be allowed to use the city streets to lay pipes to supply heat from a central plant without other compensation at any time other than enough steam to heat the city's buildings that may be located within 132 feet of a pipe line.

The picnic of the George Stevenson, (plumber) employees, Hamilton, on Saturday, August 21, at Oaklands was one of the most successful they have ever held. Mr. Hancock, manager of the Gurney foundry, acted as umpire for the baseball game between the married and single men. The single men won by a score of 18—0. The prize was a box of cigars donated by the Gurney Foundry Co.

William E. Bean, Perth County, is applying for a declaration that the aldermen of the City of Stratford are guilty of contempt of court for ceasing to pollute the River Avon, which runs through Mr. Bean's farm, about a mile below the sewage works of the city. Mr. Bean says that in 1908 two of his cows died from drinking of the river, and several other animals on the farm became seriously sick. This is corroborated by other farmers.

C. S. Cornelius and A. S. Lamond, of the Canadian Wolverine Co., Chatham, Ont., have returned from attending the annual reunion of the salesmen of the Wolverine Brass Works, Grand Rapids, of which the Chatham concern is the Canadian branch. Two days were spent in discussing plans for the next season's selling campaign, after which came a day's outing, as the guests of President L. A. Cornelius and Secretary H. C. Cornelius at the Cornelius cottage, on the shores of Whitefish Lake. Field and aquatic sports, two indoor baseball games, and trap and rifle shooting were leading features of the afternoon's programme, capped by a sumptuous picnic dinner.

Group of Wolverine Brass Travelers at their Annual Convention.

WOLVERINE SALESMEN ENJOY THEMSELVES.

Salesmen from every state in the Union, as well as the Dominion of Canada, visited the Wolverine Brass Works, Grand Rapids, Mich., on Aug. 11, where for two days they attended the annual "Salesmen's School," after which they enjoyed a round up of pleasure prepared for them by President L. A. Cornelius and Secretary H. C. Cornelius, at the latter's cottage on White Fish Lake. On Friday, the 13th, 36 salesmen and office employes started at 7.00 a.m. from their headquarters at the Pantland Hotel, and in nine autos made the 34 miles in record time.

C. J. Mick Defeating Charley Bakemeyer in the High Kick.

On their arrival a game of baseball was played, and after a sumptuous chicken dinner served at the hotel, a regular order of sports was taken up. In the "high kick," C. H. Bakemeyer of the Canadian Wolverine Co., Chatham, Ont., thought his honors a surety until C. J. Mick, of New Orleans, distanced him.

After supper they gathered about the piano and with their songs demonstrated their line of accomplishments was not entirely confined to that of selling goods. Arriving back at Grand Rapids, E. H. Ullery formed the men in line and marched them single file, with hands on shoulders through the streets to their headquarters at the Pantland Hotel, where they disbanded after the most enjoyable day that had ever been planned by the company for the annual entertainment of its men.

STANDARD SANITARY CO. BUY SITE.

The Standard Sanitary Manufacturing Co., Pittsburg, have purchased a site for their Canadian factory on Bloor Street West, Toronto, adjoining the Canadian Fairbanks-Morse plant and north of the King Radiator and Somerville Brass plants. The sale was made through Robins, Limited.

For some time there has been uncertainty as to whether Toronto or Montreal would secure the industry, but the purchase of the site named indicates that Toronto has won out.

UNION IN RECEIVER'S HANDS.

An order has been issued by Justice Metcalfe, Winnipeg, appointing a receiver for the Winnipeg Journeymen Plumbers Union to receive all tolls and dues which are payable by the members of the union. The order is for the purpose of satisfying a judgment of $4,000, being the verdict with costs awarded the master plumbers by Mr. Justice Mathers for damages sustained by Cotter Bros., Winnipeg, for the picketing of their premises during a strike. The men are appealing to the privy council against this decision.

Under the judgment execution was issued for some $4,000, no part of which has been paid, and the sheriff, in an affidavit, states that he can seize nothing of value under it. The granting of this order has caused great interest in labor circles.

Contracts for building the following sewers at Hamilton were let: Little Peel street, to J. Armstrong, 43 cents a foot; Wilson street from Emerald street to East avenue, to A. Mercer, 74 cents a foot; Albert road, to J. Armstrong, 47 cents a foot.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Public Buildings.

Tenders are being asked for plumbing for the new school at Ingersoll.

Strathcona ratepayers have approved a by-law to raise $15,000 for the erection of a new fire hall.

The Montreal Catholic School Commissioners have taken out a permit for a new $25,000 school.

C. Reichman has been awarded the contract for an extension to the Methodist church, Port Colborne.

Notre Dame de Grace, Que., will immediately begin work on the construction of a $20,000 town hall.

The contract for the erection of the new fire hall at Fernie, has been awarded to A. Rizzuto at $10,480.

Smith Bros. & Wilson, at $15,500, have the contract for building the addition to Westminster school, Lethbridge.

Some $30,000 will be spent on building in anticipation of the Dominion Exhibition at St. John next year.

A considerable sum will be expended on the enlargement and improvement of the Maritime winter fair building at Amherst, N.S.

R. Rogers has the contract for two temporary schools in the Westmount and Norwood extensions of Moose Jaw. Cost $2,000 each.

At a recent meeting of St. John's church, St. Thomas, it was decided to proceed immediately with the erection of the new building.

The contract for the erection of the Palmerston R. C. church has been let to M. Woolridge, and the work will be proceeded with at once.

The Public Works Department has let a contract for the extension of the court house at North Bay at a cost of $4,300 to R. Wallace and Son.

The Toronto Ferry Co. will spend at least $500,000 on new buildings at Hanlan's Point this winter to replace the structures recently burned.

The contract for the construction of the new Catholic church at Vancouver, to be known as St. Patrick's has been let to Dissette & Dean for $17,500.

M. J. O'Brien, of the O'Brien Mine, Cobalt, has donated the sites for a new R. C. church, school and presbytery. The church will cost $20,000 to build.

The contract for building the collegiate institute at Saskatoon has been awarded to the Saskatchewan Building and Construction Co. of Regina, at $84,555.

The contract for the erection of the new Drew Street school, Fort William, has been awarded to M. H. Braden. Operations will be started at once.

Work has just been commenced on the erection of a new building for the First Baptist church congregation at Vancouver at an estimated cost of $75,000.

J. Fowler, Goderich, is preparing plans for an addition to the hospital in that town. Approximate cost $4,500. Tenders will be invited about September 1st.

A new building for the women's prison will be built at the Kingston penitentiary, also a new house for the deputy warden and a new wing to the prison.

A permit has issued at Toronto for the new Dale Presbyterian Church, at a cost of $85,000. The structure will be fireproof, and have a seating capacity of 1,500.

A permit for the new St. Anthony's Roman Catholic Church, to be built at Toronto was issued the other day. The edifice will be of stone and will cost $40,000.

Tenders have been called for the excavation work for the two new science buildings to be erected at Queen's University, Kingston. The two will cost $132,000.

The Hochelaga School Commissioners, have awarded the contract for the erection of a school building at the corner of Forsyth and Hogan streets, to N. Sawyer, Montreal.

The work of pulling down the five or six houses adjoining St. Michael's Hospital, Toronto, has been commenced, to make room for the proposed extension to the hospital buildings.

The Manitoba provincial government has decided to give a grant of $250,000 to the Canadian Exposition and Selkirk Centennial, which will include the expenditure on the provincial buildings.

The corporation of Quebec technical schools has accepted the plans prepared by R. Lemay, for the construction of their new building to be erected at Quebec city. Estimated cost $250,000.

The Montreal Catholic School Commissioners have taken out a permit for a new school to be erected in St. Gabriel Ward, at an estimated cost of $60,000. Labelle and Lessard are the contractors.

Rev. Father Thomas O'Donnell, pastor of St. Ann's Church, Toronto, is having plans prepared for a new church after the model of the Basilica in the village of St. Anne de Beaupre, near Quebec. The cost will be $75,000.

At the last meeting of the Victoria school board a notice of motion was made to have a by-law prepared to raise between $150,000 and $200,000 for the building of a new high school, which at the present time is much needed.

J. L. Wilson & Son, are calling for tenders for all trades for the complete renovation of the Brisco Opera House, Chatham, Ont., into offices and apartment buildings. There is talk of a new opera house for Chatham next summer.

It is estimated that the building construction this year at Kingston exclusive of erections at the locomotive works will total the sum of $350,000. So far the dwelling houses being erected total about $200,000.

Tenders are being asked for the erection of a new building to replace the MacDonald Consolidated School, at Kingston, King's County, N. B. The building is to be two storeys with basement and will cost in the vicinity of $12,000.

Municipal Undertakings.

Weyburn, Sask., is considering the installation of a sewerage system.

R. S. Low has the contract for installing sewers at Sydney, C.B., at $20,000.

Work has been commenced on the new $20,000 waterworks system at Francis, Sask.

It has been decided to build a trunk sewer at Kingston from Queen's university to Stuart Street.

The Prince Albert city council has passed by-laws to raise $4,300 in all for water and sewer extensions.

Montreal's Finance Committee has decided to vote $17,000 for the purchase and laying of waterpipes in that city.

English capitalists are now being interested in the project to pipe natural gas from the Port Dover field to London.

The contract for supply of pipe for the new sewerage system being installed at Sydney, N.S., has been awarded to the Toronto Sewer Pipe Co., Toronto.

The contract for sewer extensions to be carried out this year at Sydney, has been awarded to R. S. Lowe, for the Vulcanite Paving Company, at $13,031.

Ratepayers of Notre Dame de Grace having voted $350,000 for public improvements, about $125,000 of this will be expended on sewers, work to begin this fall.

The Ottawa Board of Control have recommended for acceptance for supply of 120 feet of 24-foot steel pipe for sewerage purposes, the tender of P. J. Powers & Company, at $418.80.

The demand of Vancouver for sewer pipe this year has been so great that the plant from which the city supply is usually obtained has been totally unable to keep up with the demand. As a consequence the contractors for the supply have been obliged to get the pipe from whatever source is available. Thirty carloads have already been brought in from Seattle and St. Louis and other shipments have been ordered from these places. In addition, 10,000 feet of 10-inch pipe has been ordered from the old country and is coming to Vancouver by sailing vessel.

Tenders for cast-iron pipe, valves, pig lead, etc., for the Victoria water works department were received from the following: For pipe, R. P. Rithet, $50,930; W. G. Winterburn, $49,892; Stavely Coal & Iron Co., $49,592; Robertson, Godson Co., Vancouver, $50,131; A. Rickaley, $44,190; Robert Ward & Co., $51,191; R. Angus, $48,969; M. & L. Samuel, Benjamin & Co., $54,381. Tenders were also received from Birtley Iron Co., London, and N. A. Drury, Montreal, but the prices were not given in the aggregate. Tenders for valves were received from E. G. Prior & Co., A. Sheret, W. G. Winterburn, A. Stone & Co., London; Canadian General Electric Co., Walter Fraser & Co., M. & L. Samuel, Benjamin & Co., Crane & Co. Tenders for pig lead were put in by Robert Ward & Co., Robertson, Godson Co., and R. P. Rithet. All the tenders were referred to the purchasing agent.

PLUMBING AND HEATING MARKETS

MONTREAL.

August 31.—There is a very strong call for all plumbing lines, and supply houses are extremely busy. In fact, at no other time during the year has there been so many orders pouring in, and indications point to a continuance of this right through the fall. Plumbers are very busy, and in some instances are booked up for many weeks. Building is going on at a tremendous pace, and contracts for new structures are being placed every day.

With this heavy call upon materials, the markets are very firm in price. As we stated in our last report, soil and iron pipe have become scarce, especially the former. Solder is very firm. In some cases it has been marked up, but the general price is still around our last figures. There is a very optimistic tone to the markets.

SOIL PIPE—The scarcity in soil pipe still continues, and manufacturers and jobbers are hard pressed to fulfill orders. Plants are working at full capacity, and yet it is impossible to catch up with the demand. Users who took our advice some time back in stocking up are now reaping the advantage. We quote light 60 off, medium and extra heavy 70.

LEAD PIPE—There is a very heavy call, jobbers receiving orders from all parts. Big inroads have been made upon stocks, but there is still a sufficient supply on the market. It would be just as well, however, for users to guard themselves. Prices are firm but unchanged. We quote pipe and waste at 27½ off; traps and bends at 50; caulking lead at 5c per pound.

SOLDER—Solder is very firm in tone and has advanced in some quarters. Generally the old price is maintained, but this may not last for long. There is a strong demand, and a large amount of solder is being consumed. We quote 19½c for half and half, and 18½c for wiping.

IRON PIPE—The scarcity in some sizes still obtains and delivery is hard to get. The demand keeps up, and large orders are being consigned by jobbers not only to local but to outside points. The market is firm and unchanged. We quote: ¾-inch to 4-in., black, 72½ off; galvanized, 62½ off.

RADIATORS AND BOILERS—The demand is very active, and manufacturers are hard pressed to keep up with the orders. The big residential call locally has kept jobbers very busy. General satisfaction is expressed with the position, and the fall promises to be a record one. The market is unchanged and we quote 50 and 10 off.

BRASS GOODS—The market is very firm, and with the improvement in copper prices look to be getting firmer. There is better call for high-grade lines. We continue to quote: Compression work, high grade, 60 and 10 off; standard, 70; fuller 75 off.

ENAMELWARE—There is a heavy demand for enamelware, and jobbers are hard pressed to keep up with their orders, especially in the popular shapes. Manufacturers are working a full pressure to keep a good supply on the market. The best grade lines are in most popular demand. The market is firm.

METALS—Tin, making a jump in the English market, jobbing prices have advanced. Copper is firm and unchanged. We quote: Ingot copper, 14½c; ingot tin, 33½c; lead, $3.55; pig iron, Middlesboro No. 3, $16.50 to $16.75; Summerlee, $18.75.

TORONTO.

Aug. 31.—"Still splendid business being done." Such is the report given by all the local plumbing supply houses. Enamelware and pipe seem in most demand, and the master plumbers are exceedingly busy.

Prices are unchanged from last quotations, but the market is firm. Complaint

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TORONTO EXHIBITION 1909

STOVE BUILDING

is made that the price figures are too low, considering the state of the business world. Provincial centres state trading is fairly active, especially in the larger towns. The Toronto Exhibition is calling for some attention, and gossip among the trade. Nearly every supply house and manufacturer in these parts will be represented at the fair by a good exhibit.

ENAMELWARE—Factories are running at capacity to meet the demand made for the wantable lines. These are the better grades and standard sizes of baths and one-piece lavatories and sinks. A good call is also made for laundry tubs of various kinds, and foot-baths, too, are better sellers than they were last year. The notable feature is that the call this season, while larger than last year, is for higher grades of goods. Prices are unchanged.

IRON PIPE AND FITINGS—Demand for galvanized pipe still keeps up, and stocks in all the supply houses are low. This applies more particularly to the smaller sizes. Quotations are unchanged: Galvanized pipe, 1-inch size, is $6.19, and black pipe, same size is $4.54. Electric instalations making demands for black pipe. A big call is also made for malleable fittings. The price is a 40 per cent. discount. Cast iron fittings are at 65 per cent., with good trading being done.

BOILERS AND RADIATORS—Business in heating lines is if anything better than it was a fortnight ago. As the season advances the rush for all heating lines increases. Steamfitters report fine business, and a big demand. Steam boilers, 60 and 10; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 10; steam radiators, 50.10 and 2½ per cent.; angles and curves, 25 per cent.; these are still the prices unchanged from last issue.

LEAD PIPE—Trading is fair, and improving. The market is unchanged. Pipe and waste are 27½ p.c.; traps and bends, 50 p.c.; and caulking lead, 4½ cents a pound.

SOLDER—Though stocks and supplies are large, there is a steadily greater demand for all grades of solder. The market quotations are unchanged from last issue, at 18½ cents for wiping and 19 cents for half-and-half.

BRASS GOODS—Not only are brass goods in a better position than a year ago, but just at present brass goods manufacturers state they have to put on night shifts to get out the work. Prices are firm, though regarded low by some of the supply men.

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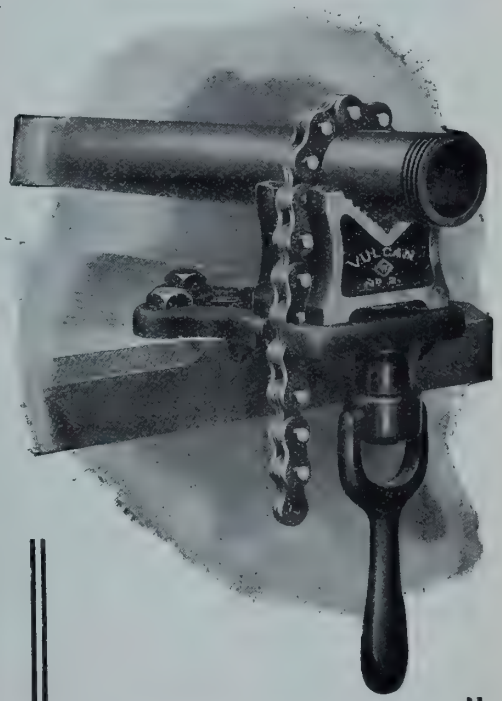

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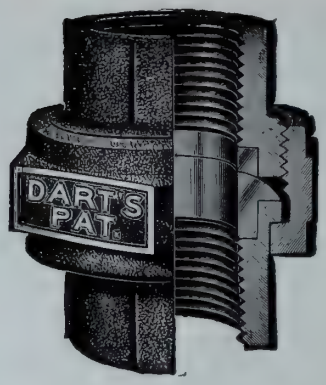

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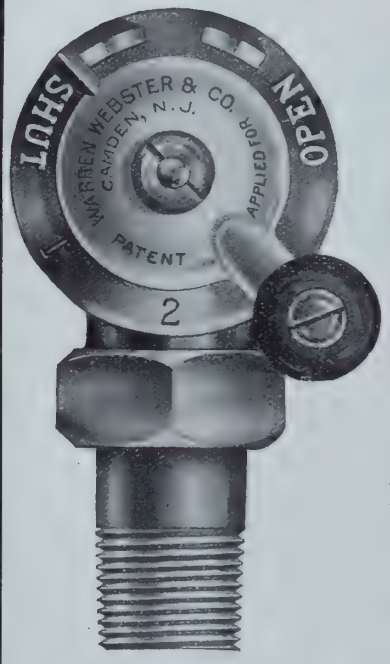

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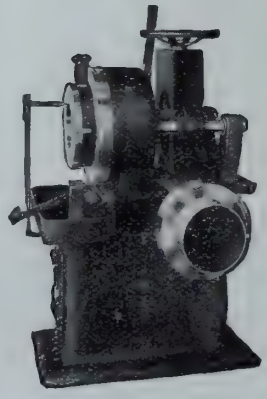

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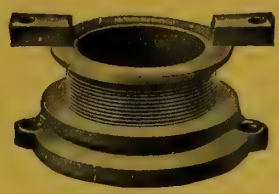

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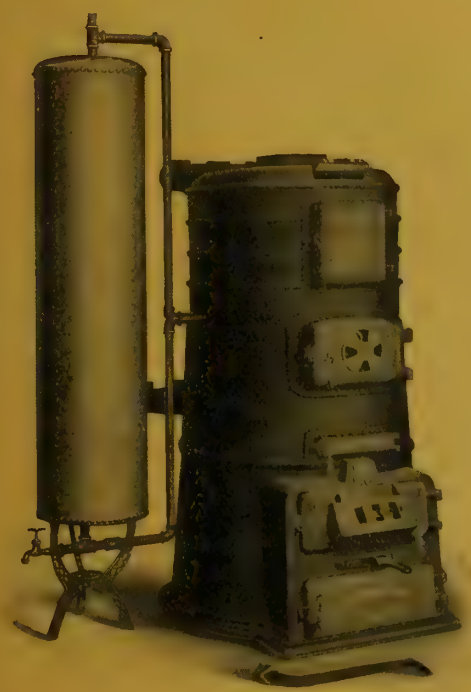

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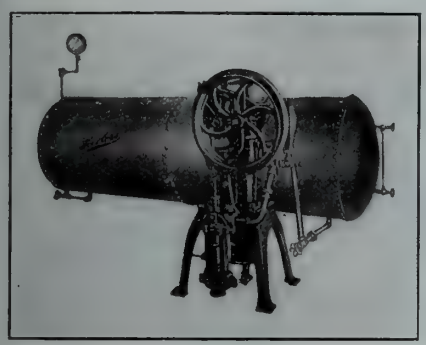

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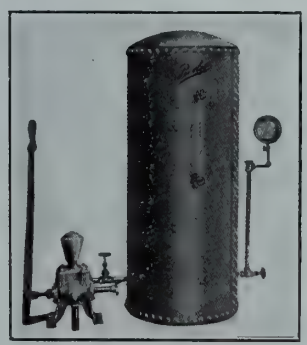

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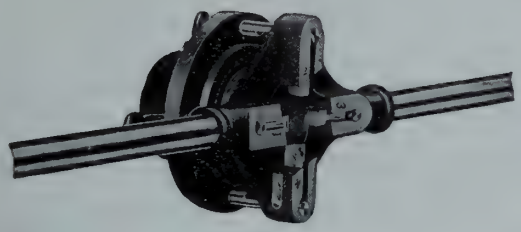

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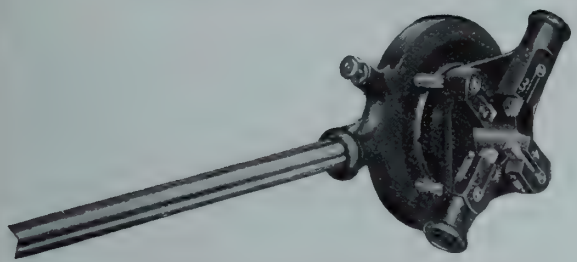

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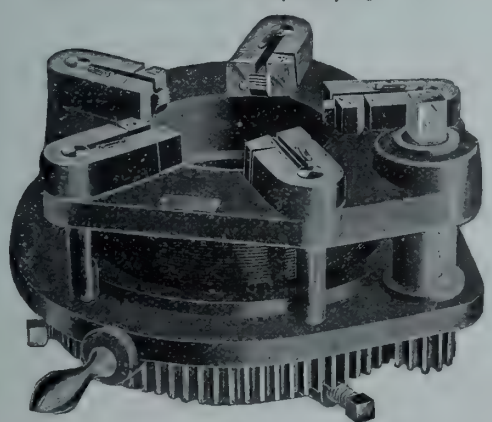

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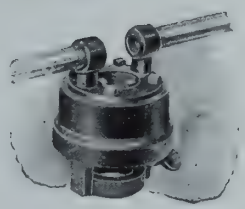

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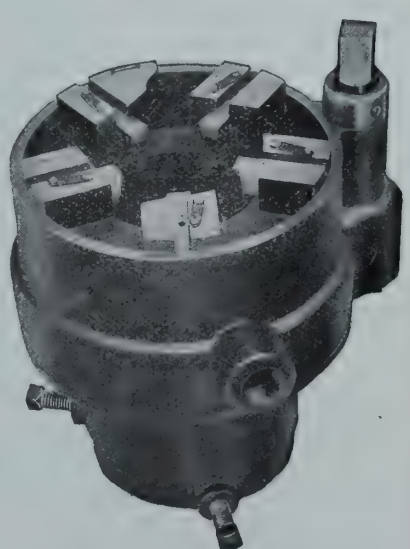

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TORONTO, SEPTEMBER 15, 1909

PLUMBING CONVENTION AT MONTREAL.

As this issue goes to press the fourteenth annual convention of the Canadian National Master Plumbers' and Steamfitters' Association is meeting at Montreal, the dates being September 15 and 16.

The meeting promises to be the best held for three or four years and there will be more Ontario delegates on hand than at any convention since the convention at Toronto about five years ago. The Maritime Provinces will also send delegates.

Reports received from all parts of Ontario indicate that there is a growing feeling in favor of reorganization and the coming winter will probably see a movement develop and a convention called to form a provincial association.

Montreal master plumbers and supply men have done nobly for the National Association during the past three years and it is up to the men from Ontario to take hold during the coming year. Nova Scotia may ask for next year's National Convention and in this case they deserve consideration owing to their faithful support of the National Association in recent years as well as their recent incorporation of their provincial organization.

But the plumbers throughout Canada are looking to Ontario to take the lead in the work of reorganizing the trade and we are confident that they will not be disappointed.

ENAMELWARE MERGER AND NEW FACTORY.

Two important transactions concerning the manufacture of enamelware in Canada have been brought to a head during the past week after many months of negotiations.

The Standard Ideal Co., as announced in The Plumber and Steamfitter of August 2, is to be reorganized with a capitalization of $2,000,000 and the name of the company changed. Several meetings have been held between representatives of the Standard Ideal and Amherst Foundry Companies and at a meeting in Montreal on Friday a deal was consummated amalgamating the two companies under the name of the Standard Ideal Manufacturing Co.

The other transaction is the definite purchase of a site in Toronto by the Standard Sanitary Manufacturing Co., for their Canadian factory. It was announced a fortnight ago that Toronto had definitely secured the industry but it was only last week that the exact site was decided upon and the signatures put on paper. It is announced that in six months the new plant will be turning out enameled bath tubs and in a year a full line will be produced.

These changes mean that Canada will have three enamelware factories, the two established industries at Port Hope and Amherst being controlled by a strong corporation composed chiefly of Montreal capitalists, and the new industry at Toronto, controlled by the Pittsburg capitalists who dominate the market in the United States.

PUBLIC LAVATORY FOR MONTREAL.

Once more an attempt is being made to secure a public lavatory for Montreal. At a recent meeting of the Health Committee it was decided to ask the Finance Committee for $10,000, to build one on Victoria Square—for which purpose no better location could be found—or on some other prominent place. It is true that this is not the first time by a good many that the Finance Committee have been asked for funds for such purpose, and have refused on the grounds that there has been no money available, and the long suffering citizens and visitors to Montreal may find the present request going the way of the others. Still hope springs eternal, and this time the Finance Committee may spring a pleasant surprise upon the people.

There is always hope when a request of this character is put forward again and again. It shows that the Health Committee are alive to their responsibilities, although it cannot be said that they have pushed the matter to the extent it could be pushed. One rebuff from the Finance Committee and they let the matter drop for a time, instead of making an active crusade of the matter and never letting up until the money has been found. There is so much money wasted in the administration of the city that it is absurd to say that the Finance Committee cannot find the funds. But still they insist upon making this excuse, and the only thing left is for the Health Committee to keep on urging until the money is found.

And it must be found. The health of the city demands that some attention be paid to the providing of public lavatories. It seems almost incredible in these days of civilizatian that a city of the size of Montreal should be without a convenience of any description. What must the thousands of people who are visiting the city during the present week think of its boasted advancement. They were told to come back to Montreal to see the improvements that had occurred in their native city, but in one respect at any rate, and in a most vital one, for it concerns the health of the people, there has been no advance. There has been a retrogression as compared with other cities.

It is time that the citizens should take the matter into their own hands, and if the Health Committee cannot force the purse of the Finance Committee, do the forcing themselves. The columns of The Plumber and Steamfitter have from time to time been devoted to the matter, and we will continue to urge upon Montreal plumbers not to rest content until this reproach to their city is done away with. It is a serious matter. It concerns the health of every man, woman and child in Montreal. Master plumbers, by the nature of their work and the standing of their profession, can do much to push on the reform of Montreal. Their words must have weight with their fellow citizens and they should use this influence every day of the week.

It is not one public convenience that Montreal needs, but many. For the time being, however, the citizens will be content with one. Let us trust therefore, in the interest of the public health that the money will be found. If not, the reformers must not be daunted, but must go ahead with their campaign. It must not be forgotten that in the end public opinion must win.

PUBLIC COMFORT STATIONS.

Some interesting observations were made in a recent report on public comfort stations by Robert Robertson, chairman of the Sanitary Committee of the Massachusetts Plumbers' Association. In part it is as follows:

A few years ago I took a summer outing across the Atlantic and spent some time in England, Scotland and the Continent. One of the first things that interest men in our line of business and which without question draws from all Americans words of approbation and admiration is the convenient and frequent stations located in the public streets in Scotland, England and France. There is no question but what we consider ourselves far in advance of foreign countries on many matters of public utilities throughout the United States, but without question we are 20 years behind in the matter of public comfort stations. We find them across the water conveniently located in small public squares or at the intersection of two streets, and are what we might call an island of safety in the centre of a large and bustling thoroughfare or square.

In England and Scotland practically all the stations are underground, but in France we find many above ground. In England, where I had the most experience, they are controlled by a "drop a penny in the slot device," which gives you a compartment containing a lavatory with towels, soap, brush, etc. When you compare the privilege that permits you in nearly every busy community of dropping into such a place as this you appreciate the utter hopelessness of finding anything of this kind in an American city, except, of course, with a very few exceptions. Ordinarily in our cities, when a man desires to brush up he drops into a hotel barroom. In the hotel he is looked over by a man in attendance, who waves a brush at him and if he merely does that he expects a tip, and if you don't give it you feel as though you had been pretty close. On the other hand, in the barroom you find dirty towels and sometimes filthy conditions in addition to this. Doesn't it seem strange that these conditions exist in any State that otherwise does so much for the human being?

Take, for instance, my own city of 20,000 inhabitants. We have no hotels or barrooms and no public comfort places. The consequence is that every man who does business in the centre of any city or town is busy from morning to night with people who desire a drink of water or the use of your toilet room. It may seem selfish to object to this, but in my opinion it should be unnecessary, and every town or city of over 5,000 inhabitants should be compelled to maintain one of these stations for every 5,000 people. The installation is not expensive as compared with many other city improvements and at many busy corners where there are pay closets etc., they would be self-supporting. We have but to look at the station at Park street, in Boston, at the corner of the Common, to see the usefulness and great benefit derived from it.

PREPARING FOR GAS GOODS TRADE.

Some plumbers have allowed a very profitable business to pass from them to hardware stores which they are better prepared to handle, as the same customers could be served to greater advantage by the plumbers, says T. R. M. in the Metal Worker.

After each summer season there is the necessity of cleaning the gas burners used to light various homes in the immediate vicinity of the shop, to replace the burners and to make suggestions which will lead to the houses being better illuminated. A regular, steady demand has grown up for incandescent mantles and for the burners used in connection with them. Whether or not there is the saving in gas which is claimed when these burners are used, there is no question that there is a much better illumination, and the plumber is better qualified to select the right kind of a burner and put it on the fixtures of the customer than any other tradesman. He will lose nothing if he follows the same practices of others who sell the incandescent burners and who put the burners on the fixtures in the homes of some of his customers for a test.

If a burner is carried in stock a customer is made for mantles as they need to be renewed. With a stock of such fittings and supplies, the demand for shades, gas fixtures and similar equuipment is sure to bring a profitable trade to the shop, even to the extent of running piping system to rooms and places where there is no light available. This familiarity with the plumber will frequently bring to him a request to change the piping to the gas stove used for cooking, and possibly sales for gas heating and cooking equipment.

In many places there is a great variation in the gas pressure at different times of the day, and a considerable saving in gas is effected by the use of governors on the supply mains. The use of the governor equalizes the pressure and makes it steady at all times, so that whether heating and cooking stoves or lighting burners are used their operation is both more satisfactory and more economical.

Where the plumber has displayed plumbing fixtures in his window during the building season, there will be some advantage in displaying lighting goods when the fall opens, with its longer evenings, so as to attract attention and bring trade to his shop.

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Great Possibilities Shown by National Exhibition

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Toronto, September 15.—No annual feature in the life of the Dominion is greater than the Canadian National Exhibition. Whereas other countries hold at wide intervals and in honor of some special event or anniversary great displays which are dubbed "world's fairs," and which on account of their infrequency and irregularity have little influence on National life, Canada has in the National Exhibition a great national fair, which is the result of years of development and which therefore has all the characteristics of a national event. It is as unique a feature as the great fair of Nijni-Novgorod, which is typically Russian, just as this is typically Canadian. They are both merely the perfection of the ordinary county fair, and this gives them all their beauty and their value.

The thirty-first season of the great Exhibition now belongs to the past and this year it was a greater success than ever before. In fact, the growth of the Exhibition becomes more remarkable with every time it is held. There are no signs that it has yet arrived at anything like its full growth. On the contrary, everything seems to point to its continual development into the greatest annual fair in the world, a position it even now is not far from occupying. It is already the second largest institution of the kind on earth, and it begins to be doubtful if even the great fair at Nijni-Novgorod surpasses it materially. But mere size is not everything. Even if there were many fairs surpassing in extent the Canadian National, this would not lessen its great national value. It would still serve as the great meeting place of Canadians from all parts of the Dominion. It would still bring them together as nothing else can do; and it would still make them acquainted with one another and with distant parts of their country in the best possible way—that is, through their productions. This is the great value of such an institution as this Exposition, and this is why Canadians of every province unite in "booming" it. They all realize that the Fair has grown beyond mere local restrictions, and that it is in every sense a national event.

CANADIAN NATIONAL EXHIBITION —The Philip Carey Company's Display.

CAREY ROOFING AND COVERINGS.

An exhibit of merit in Machinery Hall, which called forth praise was that of The Philp Carey Co., whose Canadian distributing warehouses are in Toronto, Montreal and Winnipeg. They are manufacturers of roofing, paints and pipe coverings, and claim to be the oldest concern in existence, making combination roofing.

The Carey magnesia flexible cement roofing is not an experimental roofing, it having been made for the past quarter century, and always at the same uniform high-grade, regardless of cost or conditions. The proof of this is its durability, the roofing being guaranteed for 10 years without repainting.

Its fire-resisting properties were amply shown at the recent fire which destroyed at Hanlan's Point amusement resort, every building there, but the merry-go-round, which was covered with Carey's roofing, and Manager Solmon stated in an interview to the Toronto press that it was the roofing which saved that structure.

The company will take contracts to put their roofing on buildings in any part of the Dominion, either on flat or steep roofs.

The Clifton House at Niagara Falls, and the new locomotive shops at the Canada Foundry Works, Toronto, are two structures covered with Carey's cement roofing. Asphalt, asbestos and felt enter into the combination of this roofing, making it compact, flexible and strong, able to resist heat or cold, without drying out, cracking or breaking. It will last as long as the sheathing boards hold, the only attention required being in the way of repainting.

The Carey Co. also make paints for exposed surfaces. Magnesia paint for felt roofs is an extra heavy material, which penetrates to the fibres as well as coating the surface, thus waterproofing and preserving the roofing; Carey's Black Asphalt Paint is an economical material for painting metal surfaces of all kinds; and Universal Coating is an all-round black paint for roofs, fences and underground exposures, as it is unaffected by moisture or dampness. The company as well make cold water paints and a cement composition in stick form called "Stop-a-leke" for repair work.

As makers of asbestos pipe coverings the Carey Company is known all over the continent, and their connection with plumbers and steamfitters is steadly increasing. The company's Canadian factory is located at Hamilton, and they have also several manufacturing plants in the United States.

GRAND ENAMELFARE EXHIBIT.

It is doubtful if there was a more handsome and interesting exhibit on the grounds than that of the Standard Ideal Co., Port Hope, in the Industrial Building. And certainly there was none anywhere that had more genuine interest to the man who intends building a home or other building than the wonderful display of the foundryman's art made by this company.

Judged by the number of visitors who closely examined the large variety of fixtures shown there will be a better call for high grade bath-room fixtures in future, and the master plumbers in all parts of Canada should profit materially from the exhibit. Many architects and prospective builders expressed their surprise at the quality and design of enamelware shown and frankly admitted that they had been buying imported goods without realizing that Canadian workmen were capable of doing such high-grade work.

Occupying an entire section of about 70 feet in length it was found hard to obtain a photograph which would do justice to the exhibit. As will be seen, no expense was spared in making the booth attractive, it being roofed in, artistically decorated, well lighted, and the floor covered with linoleum.

The central feature of the display undoubtedly was the showing of "Alexandra" high-grade porcelain ware, grouped in the centre of the booth. About a score of fixtures of facsimile solid porcelain were shown, including a number of new designs of bath tubs, lavatories, waterclosets, pedestal child's baths, manicure and dressing tables. In design these would pass anywhere for solid porcelain, and were it not for the sign in the background, "the largest exclusive manufacturers of enamelware in the British Empire," one would have been led to believe that the Standard Ideal Co. conducted a pottery as well as a foundry business. As a matter of fact, Alexandra ware commands a far higher price than solid porcelain ware, on account of its greater durability. Indeed, arrangements have been made in several cases to replace solid porcelain with Standard Ideal enamelware. Two master plumbers got into an argument over this matter, and A. D. McArthur, Ontario sales representative had to be called in to convince one of the debaters that a closet on display was enameled iron rather than solid porcelain.

The Standard Ideal Co. has gone to an enormous expense in preparing the drawings and master patterns for the "Alexandra" ware, the equipment for some of the fixtures having cost thousands of dollars before a single piece was manufactured. Having developed an enormous trade in the less expensive lines, however, it was felt that the demand for a high-grade of goods should be supplied and Canadian workmen given a chance to produce the expensive bathroom fixtures which have had to be imported up to the past year or so. And having gone to this expense the Standard Ideal Co. rightly feel that Canadian plumbers should give preference to Canadian made goods, now that it is unnecessary to import high-grade enamelware.

Several designs of fixtures with bidet attachments attracted considerable attention, this French idea having caught on in Canada amongst the class who can pay the price for the most modern and scientific fixtures. Every woman who has studied the advantages to be gained by the use of this fixture is an enthusiast on the subject.

The large variety of lavatories, both pedestal and wall, also excited comment, while the demonstration of bubble drinking fountains for use in schools and public buildings excited such interest that it was sugested that master plumbers could not adopt a better advertising scheme than to fit up a bubble fountain under pressure in front of their shops.

The beautiful pure mellow coloring in the enameled fixtures was very noticeable, another point of merit being that every fixture on display was enameled both inside and out. Both in color and design, the fixtures were all that could be desired.

A new product shown was the new enameled iron closet tank, being made in two designs, one square and the other with rounded front. Enameled laundry tubs, kitchen and slop sinks, foot baths, etc., were also shown, as were also sections of the new "Impermeable" enameled soil pipe, recently introduced by the company and already adopted for use in several hospitals and public buildings.

H. T. Bush, general manager of the company, visited the booth on several occasions, A. D. McArthur, being in charge, assisted by Wm. Linton, Toronto salesman.

CANADIAN NATIONAL EXHIBITION—Standard Ideal Company's Enamelware Display.

BEAVER BRAND ENAMELWARE.

The Amherst Foundry Co's exhibit appears in a new dress this year, an attractive roof covering being supported with imitation marble pillars, the whole being painted white to match the snow white enameled baths and lavatories on display inside.

The location was the same as the Amherst Co. have occupied for the past couple of years, being just inside the centre entrance to the Industrial Building. A. J. Jackson, the Ontario sales representative of the company, was also shown with the baths along with a stand containing four types of wall lavatories made by the Amherst company.

Many of the designs shown were new, and favorable comments were heard regarding the completeness of the Amherst line, it appealing particularly to the master plumber whose customers want a guaranteed quality of high-grade goods at a moderate price.

A combination fixture exclusively shown by the Amherst Company is the combination laundry tub and sink, especially suitable to apartment houses or dwellings where a separate laundry cannot be fitted up. When not in use the laundry tub is covered and acts as a work table or drain board for the sink. The individual laundry tubs shown by the Amherst Co. also attracted a lot of attention, the wringer attachment and nickel plated fittings setting them off to good advantage.

There was also a big showing of kitchen sinks with and without drain boards, slop sinks, etc., while particular attention was drawn to the new hotel kitchen sink, eight inches in depth, and fitted with overflow, plug and washer, making it suitable for washing dishes. This innovation, according to Mr. Jackson, has caught on with the trade fully as well as the popular roll rim sink, with soap dish attachment, for which orders have been so heavy that it has been difficult for the Amherst Co. to keep pace with the demand.

Altogether the "Beaver Brand" Enamelware exhibit is very creditable to Mr. Jackson, who arranged it, again in charge being supported a part of the time by Messrs. C. A. Lusby, secretary-treasurer, and J. A. Crossman, manager, of the company, both of whom reside at Amherst, N.S.

The Amherst booth was well lighted, this bringing out the beauty of the enamelware and showing it off to excellent advantage, grouped between the two entrances to the exhibit were seven bath tubs of various styles and sizes, while at the back were samples of some of the many designs of wall lavatories. Two beautiful pedestal lavatories were eclipsing all former efforts. Since taking over the Ontario agency for the Amherst Foundry Co.'s products, a couple of years ago, Mr. Jackson has been eminently successful and that his popularity with the trade is increasing is best evidenced by the steady growth of his orders from all parts of Ontario. Already this year his volume of business has increased over fifty per cent. over all of 1908, and in keeping with this growing trade he has established a large display room in connection with his warerooms and offices at 178 Victoria Street, Toronto.

CANADIAN NATIONAL EXHIBITION—Amherst Foundry Company's "Beaver Brand" Enamelware Display.

J. M. T. BRASS GOODS.

The James Morrison Brass Mfg. Co., Toronto, made a change this year by moving their exhibit from its accustomed place in Machinery Hall to a splendid corner location in the very centre of the Industrial Building, the location being very close to all the plumbing and lighting exhibits, while also very close to the stove displays where hardwaremen congregate in large numbers. The change was found to be an advantageous one from a business standpoint, bringing them into closer touch with the users of plumbing supplies, and the buyers of the high-grade lighting fixtures for which the Morrision Company has established a wide reputation.

Plumbers and hardwaremen were chiefly interested in the bath-room fixtures and gas and electric lighting lamps. A beautiful solid base porcelain tub occupied a prominent position, beside it being a sitz bath, and near at hand a magnificant shower and beautiful pedestal and wall lavatories.

Then in the front of the exhibit was a plate glass cabinet containing an elaborate display of nickeled brass goods, bath fittings, stop and waste cocks, valves and other supplies needed for plumbing work and water services. The display was very creditable and a proof of the high quality of work now done by aCnadian workmen, "J.M.T." brass goods being the recognized standard for quality whereever they are known and used.

Particularly attractive also was the display of lighting fixtures, probably the finest of these being a large piano lamp standing on the floor. The artistic coloring and general design of this fixture won the admiration of all. To attempt to describe the innumerable table, wall and ceiling fixtures would be useless in the space available, there being so many beautiful designs, and so many styles and colorings in the brass work and glass shades. The accompanying illustration will, however, give an idea of the artistic nature of this part of the display.

The Morrison display of engineers' brass work was even more handsome than in previous years, the covered booth and dark background setting it off to splendid advantage. Lord Charles Beresford, in passing through the building was attracted to the display by the fine brass marine equipment, and he spent considerable time examining the pilot house and engine room brass work. The steam gauges, locomotive mountings, J. M.T. valves, Hancock inspirators, locomotive injectors, whistles, fire nozzles, hose couplings, oil cups, and other fittings for engineers were a few of the many lines on display.

Those in charge of the exhibit were S. H. Hadley, A. Betton and James Fiddes, traveling representatives in Western Ontario, Eastern Ontario and Toronto respectively.

CANADIAN NATIONAL EXHIBITION —James Morrison Brass Manufacturing Company's Display.

SPLENDID PLUMBING DISPLAY.

Immediately opposite the main entrance of the Industrial Building was located the splendid exhibit of The James Robertson Co., Toronto, covering all their manufactured lines, including plumbing supplies, marble lavatories, lead pipe, solder, paints and white lead.

That plumbing goods can be made to look attractive was amply shown in the sample bathroom containing every requisite of the modern home, and everything in it was supplied by the company, not only the plumbing goods and fixtures, but also the tiled floor and marble wainscoting on the wall.

An elaborate solid porcelain bath on a base, was the largest piece of enamelware shown here. It occupied one of the corners of the model bathroom, and around the room, in convenient locations were set the other bathroom fixtures. The lavatory was a 36-inch solid porcelain pedestal, and the closet was a naturo, with flushometer. There was as well a shower bath attachment, and a porcelain foot bath. A simple, yet neat, medicine chest rested in the corner above the bath, and over the lavatory was a square-shaped wall mirror with electric lamps, one on each side.. A towel was at arm's length on the rack to one side of the lavatory, and a porcelain pedestal base held an ornamental palm in a porcelain jardiniere.

In the larger section was displayed a great variety of plumbers' supplies, all set out to advantage.

CANADIAN NATIONAL EXHIBITION—James Robertson Co.'s Model Bath Room.

Three bath tubs of different styles were shown—the "Luxuria," "Monarch" and "Yale," and nine Kingdom China lavatories were fitted up with the latest style of fittings.

The walls were covered with mirrors, of various shapes, styles and sizes, besides bathroom fixtures, towel bars, etc.,

CANADIAN NATIONAL EXHIBITION—James Robertson Co.'s Plumbing Display.

The closets shown were fitted up with new design tanks; and Naturo, Acme, Acme-Centripedal and Fleur-de-lis, all the fittings of which were highly nickel-plated. Roll rim sinks with back drainboards and aprons all in one piece, were decided novelties for the ladies and attracted much attention.

The exhibit as a whole was much admired, as it deserved to be, for the layout of the goods and the arrangement of the booths were made after careful planning. The decorations were suitable, and with the floor, walls and ceiling finished the display was one that will hold a place in the front rank.

One of the very newest things on exhibition was the Peerless Kitchen boiler, which successfully combines all of the important requirements of a water heater. By its use, hot water can be had in 2 minutes, and a hot bath may be had at the cost of ½ a cent. The Peerless is ready at all times; burns gas or gasoline, and has stove connections. It is simple, safe and clean. It is also noiseless and odorous, and the water heater is fit for cooking or drinking. The Peerless has an immense capacity and storage tanks may be connected where large quantities of water are needed. There are only three parts to this boiler—disc, burner and shell—and there is nothing to get lost or out of order. It looks as if the hot water problem has been solved.

A third section of the Robertson exhibit was used to show the products of the lead factory. Samples of lead-pipe, solder, etc., were on display along with an elaborate display of Robertson's paints and white lead. Robertson's lead works have won a deserved reputation for the excellence of their products, this applying to their materials for both plumbers' and painters' use.

BIG SHOWING OF METALS.

"They certainly are the metal men," said a master plumber, who, with others in the trade made the exhibt of The Canada Metal Co., Toronto, in the Machinery Hall, a headquarters and place of meeting.

The company's general manager, W. G. Harris, Sr., deserves great credit for the splendid showing of the Canada Metal Co.'s exhibit.

The specialties shown this year were Babbitt Metals—"Imperial Genuine" for high speed engine work; and "Harris Heavy-pressure," for the general hardware trade. This metal is the outcome of 20 years of study and research work made by Mr. Harris to perfect a babbitt metal that the hardwaremen could sell with all confidence, one that would give his customer every satisfaction. It runs cool on any speed, and it comes in cakes, copper-covered, with an impression of the inventor of the metal stamped on each cake.

Solder was also a feature of the exhibit, the showing including bar solder,

W. G. HARRIS, SENIOR.

wire solder, and block solder. The company makes solder for every purpose, putting it out in suitable sizes. There was as well to be seen ingot copper, ingot tin, bar tin, antimony, spelter, and various kinds of newspaper metal—linotype, monotype, typograph and monoline.

The company are large manufactures of lead pipe, traps and bends, in all sizes and had many samples of their product on view. The company also showed their non-syphon cast trap, which has many advantages over other traps, the principal one being that it cannot be syphoned. One of the most interesting things shown was lead wool, an exceedingly fine lead used for calking joints.

Recently the company erected a new smelter opposite the Exhibition Grounds for smelting all drosses and ores. This has been of great assistance, and before long they will have two additional buildings, which will greatly facilitate the extension of their business

CANADIAN NATIONAL EXHIBITION—Canada Metal Company's Display.

CANADIAN NATIONAL EXHIBITION—Dunlop Rubber Goods Co.'s Display.

CANADIAN NATIONAL EXHIBITION—Berlin Woodenware Display.

DUNLOP RUBBER GOODS.

One of the finest exhibit in the Manufacturers' Building was that of the Dunlop Tire Co., Booth Avenue, Toronto, who, from a beginning as leaders in the bicycle tire business many years ago, have developed a many-sided business in all kinds of rubber goods, many of the company's products directly interesting the retail hardware merchant, while others are articles constantly required by the master plumber in his daily work.

Dunlop tires need no introduction to dealers in or users of bicycles or automobiles, although constant improvements make the line one about which there is always something to learn.

There were some surprises for hardwaremen, however, in ruber hose, the central feature of the exhibit, being a section of the largest piece of suction rubber hose ever turned out in Canada, it weighing about 800 pounds, and being 26 inches inside diameter. This was made for use on a sand dredge.

Garden and fire hose was also featured in the display, the Dunlop Company having developed a large trade in this department. The garden hose was shown on reels in 500-foot lengths.

That bicycling and automobiling does not complete the lines of sport in which the Dunlop Company are interested, was shown by the display of rubber balls, including the famous Dunlop golf ball.

A large showcase of small goods in the centre of the exhibit contained a variety of small lines, including plumbers' rubber goods, comprising, washers, gaskets, plugs, packing and similar articles, samples of rubber tile for bathroom floors were also shown.

BERLIN WOODENWARE.

The exhibit of the Berlin Woodenware Co., Berlin, under the Grand Stand was a special attraction for those interested in the use or sale of ladders. The company are the sole patentees, and manufacturers of the celebrated double-truss, steel wire extension ladder—a ladder that is in a class by itself. In adition to these the Berlin Company make single ladders, extension ladders, extension step ladders, common step ladders—in fact ladders for everybody, the extension ladders being in one, two and three sections, for all kinds of use. All these ladders while light are strong They are made of very select Norway and Georgia pine, or Douglass fir, the rungs being of ash, elm or oak.

The ladders should be useful and valuable for plumbers, tinsmiths and galvanized roofers, as well as fruit pickers, pruners, electric linemen, street railway men, railroad corporations, etc., and hardwaremen should find them a profitable line to sell. They range in length from 20 feet to 52 feet.

Besides ladders the Berlin Wodenware Co. made various seasonable lines handled by hardwaremen. There are the perfection clothes reel, lawn settees, rocking horses, clothes washers, hammock supports, ash sifters and haying forks.

Tales of the Trade

ONE ON JACK OWSTON.

A. J. Jackson, of the Amherst Foundry Co., Toronto, played a good joke on John M. Owston, sales manger of the James Robertson Co., Toronto, during the Toronto exhibition. Mr. Jackson was admiring the Robertson exhibit and particularly commended the beauty of a jardiniere containing flowers, asking Mr. Owston how much he would take for the jardiniere after the Exhibition.

"The only way you can get that is to steal it from under my nose," replied Mr. Owston. A. J. said nothing but immediately got busy, appropriating first the jardiniere and next the stand and passing John M. each time with the "goods" and soon the Amherst Foundry exhibit was richer in appearance at the expense of the Robertson display.

A few hours later someone drew Mr. Owston's attention to the fine display of baths the Amherst Co. had and John M. saw more than the baths. Over he went with blood in his eye and without waiting for a chance to steal he appropriated his former property and soon had it back in its proper place in the Robertson display. Then John M. "stood treat" for Mr. Jackson, the rest of the boys and the policeman who wasn't called in.

Later on he tried to get even, but his well-laid plans for a joke on Mr. Jackson were frustrated by the timely arrival of the caretaker of the building.

THE DOG BIT HIM.

G. D. Clewes, who sells pipe for the Montreal Rolling Mills, is a great lover of dogs, but it got him into trouble the other day at the dog show at the Toronto Exhibition, where he spent the past fortnight in charge of the M.R.M. exhibit.

Showing his affection for the dogs by patting them one by one, he had nearly made the rounds when one hungry pup took a notion to have a meal and closed his jaws on a couple of Clewes fingers, necessitating a visit to the exhibition hospital to get the wound cauterized. G. D. says he won't bother going to the Pasteur Institute—says he knew a man who went to the Keeley Institute and then went right back and got bitten again.

CANADIAN ENAMELWARE MANUFACTURERS UNITE.

About three months ago The Plumber and Steamfitter announced that representatives of the Standard Ideal Co., Port Hope, Ont., and the Amherst Foundry Co., Amherst, N.S., had held a conference at Montreal at which the matter of merging the two companies into one corporation was discussed. Then in the Aug. 2 issue this paper announced that the Standard Ideal Co. would be reorganized by Canadian capitalists, the name of the company changed and the capitalization increased to $2,000,000.

Definite announcement can now be made that the merger has been completed and the owners of the Amherst plant have pooled their interests with the proprietors of the Standard Ideal Co., placing their stock in the hands of the Royal Securities Co., Montreal, who have been financing the reorganization and merger, to be exchanged for stock in the new company which will operate both plants. It can also be announced, on the authority of one of the directors, that the name of the new company will be the Standard Ideal Mfg. Co.

On Thursday of last week, H. T. Bush, president, and A. Douglas MacArthur, director of the Standard Ideal Co., Mr. Crossman, manager, and Mr. Lusby, secretary-treasurer of the Amherst Foundry Co., arrived at Montreal from Toronto, being met there by W. M. Aitken, of the Royal Securities Co., Montreal, and William Knight, president of the Amherst Co., and by Friday arrangements had been made for the incorporation of the two concerns under one head. Another meeting of five provisional directors in the new company, two from each company and the fifth to represent independent interests, will be held in about a week to complete the details of the deal.

The consolidation involves the only two concerns at present manufacturing bathroom enamelware in Canada, the Port Hope plant employing 600 and the Amherst foundry 250 men. The merger will make possible many economies in manufacturing and selling, a thorough reorganization of both plant and capital of both companies taking place. It will also permit of specialization in the output and result in large savings on freight shipments.

The completion of the deal has, no doubt, been hastened by the determination of the Standard Sanitary Co. to establish a Canadian factory, the consolidation making it possible to meet competition more readily. The merger starts under favorable auspices, both Port Hope and Amherst companies having developed a large trade, the former being paricularly strong with the architects as well as the plumbing trade, their ware having been specified in dozens of large public buildings in competition with high-grade imported ware.

The new company will be conducted along similar lines to the Standard Ideal Co., selling to the trade through supply houses owned by independent concerns.

PLUMBERS AT THE EXHIBITION.

The following are some of the out-of-town plumbers who visited Toronto during the Exhibition, and called into the supply houses: A. Wray, Grimsby; J. W. Kennedy, Georgetown; A. L. Shields, Kincardine; H. Mahoney, Guelph; W. D. Muckler, Oshawa; W. S. Jury, Cobalt; Harry Hymmen, Berlin; J. Heatley ("Caesar's Ghost"), Brampton; W. Peaker, Brampton; A. Colman, Lansing; Ben Noble, London; L. J. O'Dell, London; R. Purser, Windsor; Joe L'Heureux, Windsor; E. J. Dixon, St. Thomas; W. J. Gowan, Simcoe; Fred Heximer, Niagara Falls; J. Connor, Welland; Geo. Ellicott, Hamilton; Geo. McDonald, Herbert Jones, Robt. Fitzsimmons, Hamilton; Steve King, Ingersoll; T. J. Minnes, Brantford; Fred Smith, Guelph; T. Henry, Fred Sylvester, Stratford; R. B. Scott, Owen Sound; Tom Lockart, Galt; A. Archambault, Hull; H. Colbourne, Trenton; Wm. McGie, Belleville; F. Boyle, Napanee; J. G. Bastom, Kingston; C. Martin, Gananoque; Geo. Ross, Brockville; E. G. Laverdure, Ottawa; Foster Kelly, Fenelon Falls; J. H. Neelands, Barrie; Geo. Henderson, Collingwood; F. Occomore, Collingwood; Geo. Binns, Newmarket; Hugh Cleland, Meaford; J. Hambly, Barrie; T. Philips, Orillia; Mr. Latimer, Orillia; Wm. Parrot, Collingwood; W. Codiere, St. Hyacinthe; W. W. Wigg, Guy Simpson, Quebec; T. Latourelle, Montreal.

Remarkable results have been obtained by an electrical ozone-generating apparatus recently installed at the public library at Chicago. It appears that complaints had constantly been made of the unpleasant odor from accumulated human emanations, and this in spite of an excellent purified-air ventilation system, the nuisance becoming such that an attempt had to be made to counteract it. Direct current at 110 volts is converted to alternating at 120 by a rotary converter, and the latter stepped up to 8,000 volts by a transformer. This high-tension secondary current discharges between the plates of the ozonizer, through which is drawn the air led to the ventilating apparatus above. Enough oxygen is converted to free ozone to kill any living organisms in the air and neutralize any kind of odor. The most remarkable result of the installation appears to be the substitution for unpleasant if not actively unwholesome air of an atmosphere actively healthful.

Subject of Water Waste Discussed.

Address by Henry B. Davis, Washington, D.C., Before the Plumbing Inspectors in Convention at Omaha.

Hydrants and Water Closets before the Court of Criticism.

Defendants: Hydrants and Yard Closets, and the Manufacturers.

Comp'ainants: Inspector of Plumbing and Property Owners.

Decision: Guilty of wanton waste of water and cause of constant complaint.

Certain types of hydrants for drawing a domestic water supply and the so-called hopper cock for flushing an outside hopper closet have been the source of an almost infinite number of complaints from owners, tenants and the superintendent of the water department; an almost unbelievable source of water waste and a large expense for maintenance. It is a question in my mind as to whether these two methods of controlling the water supply should not be abandoned altogether and their use prohibited by an amendment to plumbing regulations generally.

Yard Hydrants and Self-Closing Valves.

With the possible exception of one make, all hydrants are subject to excessive water hammer, frequently being the cause of several bursts in a single service pipe, cases having been noted where as many as seven or eight fractures of the same pipe have been repaired. Several makes of one general type, using cup leathers in the supposedly nonwasting chamber, fail a short time after installation to exclude ground water from the chambers, with the consequence that upon opening the supply the first portion of water delivered is liberally suppiled with worms, grubs, etc., and frequently is made up largely of urine, wash water, etc., previously thrown broadcast over the yard surface in the vicinity of the drain under the hydrant nozzle. With only two exceptions known to me, either at the time of installation or as soon as the parts become slightly worn, there is little possibility of avoiding a waste of a constant stream of water amounting anywhere from a few hundred to several thousand gallons per day. The same general arguments apply to the use of hopper cocks, self-closing pitless valves and other devices for the control of a yard water closet supply. The p'ain hopper cock, which is simply one pattern of an ordinary stop and waste, is often detected in a wanton waste of a considerable stream of water. The self-closing pit valve with counterweight is guilty in the same degree, and the spring controlling pitless valve, if not quite so guilty in the matter of a waste of water, ranks with the hydrant in its predilection toward pipe bursting.

Burden of Complaint on Inspector.

While the municipal department furnishing the water is interested to a great extent, it is upon the plumbing inspector that the burden of the great volume of complaints rests heavily, keeping his force from their legitimate work. It is often hard to explain to tenants why the plumbing inspector allows the installation of a fixture that emits worms and dirt instead of clear water when first opened; it is also hard to explain to owners why the plumbing powers allow a fixture to be installed that is such a prolific source of expense for repairs; it is also hard to explain why only one or two makes of these fixtures are "approved for installation" when they are really so little better than their discredited rivals. I have often thought that perhaps it would be better if a complete prohibition were placed against outdoor hydrants and hopper cocks, and the more common forms of antifreezing closet valves, except upon special applica- of the owner in writing, in each case accompanied by the actual device intended to be installed, the acknowledgment of responsibility for the faults, and the installation of a water meter for the protection of the city water department, or the water company, as the case may be.

Inadequate Fixtures Result of Competition.

The reasons for the apparent inadequacy of these fixtures is due to two widely different reasons. The first and most important reason to my mind is that there has not been the same advance in design that there has been in the case of other fixtures. There should be a possibility of perfecting a proper valve mechanism for both these purposes that would do away with all the present objections, but that is a matter for the maker to handle and not the inspector. While inherent defects in design may be the main reason, the initial failure comes generally through cheapness of construction. Poor, thin brass work, black iron, cheap leather and rubber washers are nearly always the direct cause. This is the fault of keen competition. One firm secures the approval of a cock to be sold at $6 per dozen; a rival immediately cuts the quality of brass(?) or the thickness of the walls, has his pattern approved and sells for $5.50 per dozen; the first firm cuts workmanship down and sells at $5. This process is carried on until there is simply nothing left to cut and the ones installed are simply the very cheapest possible to obtain. In cheap real estate work and under competitive bids the low man wins and each strives to get the very cheapest material in order that his labor may pay more.

I have made this statement brief and have simply enumerated the main points of complaints and reasons in order to provide a simple and easy basis for discussion and trust that each of you will take it up as it relates to your own work, as well as the relation it has to the requirements of regulations and good practice generally, and that having once made up your case you will not rest, but give the inspecting forces of other cities, as well as the members of this society, the benefit of it.

PLUMBING SUPPLIES IN BRAZIL.

There is a growing demand in Rio de Janiero for the latest sanitary fittings and plumbing supplies, and all things which go to make up a modern equipment in bathrooms, both public and private. Nearly all of Rio de Janeiro city proper is now piped for the most modern sewerage service, and full provision is made therein for modern plumbing. There are large districts in the outlying suburbs to be improved in a similar way, so that the business is likely to grow considerably in the near future. The sewerage and water connections are given unusually thorough inspection, as is necessary in a city which has gained so much from the introduction of modern sanitary methods and appliances. On the whole, fittings for water connections ran lighter in weight than in the United States, owing to the fact that the water pressure generally is low, and also to the fact that frost is never to be considered.

From the introduction of the first modern sewer system by an English corporation until comparatively recently Eng'ish merchants were generally in the lead in such matters, and most of the imports of such goods are English, while to some extent fashion favors English ware. The United States, Germany, and Belgium, in the order named, however, have a fair share of the trade. American fittings and appliances seem to be popular and apparently there is a good opportunity to extend the trade. There is an increasing use of enameled iron bowls, baths, and uninclosed washstands. In short, the business is becoming more and more progressive and is open to the most modern supplies.

R. C. Bustard will erect at Toronto, 2 pair semi-detached 2-storey and attic, brick dwellings, to cost $10,000.

Records of Plumbing Inspection Work.

The System in Use at Washington, D.C., Described by J. F. Brady.

In a city where the work of plumbers is inspected, passed upon and approved or disapproved, as the case may be, it is necessary that some record of the inspections, decisions and data pertaining to the work in hand, be kept. While it is vitally important to the plumber doing the work to keep such records, yet the city officials having supervision over plumbing work are charged with such work in order to carry on the duties of their office in a proper and intelligent manner.

Here at the National Capital of the United States, I believe we have one of the best systems in the country in the way of records of plumbing work done by the master plumbers of the city. It is a record which is referred to many times in the course of a day's work, and must therefore be one which is absolutely correct in its many details, as well as one which will give information of even the smallest detail.

There may be records in the offices of other cities which are better than those kept by our local Plumbing Department, but I have not as yet found them. Before any plumbing work is done in the city, either new or remodeling which requires the inspection of the office, can be commenced or a permit issued, approved plans must be filed in the office of the inspector of plumbing, together with the application for the work, giving the name of the owner, the lot and square number, and specifications governing the installation. A certificate of approval is then issued if for a new building and the matter is referred to the Building Office for the issuance of the permit for the construction of the building. In all cases permits for the plumbing work are issued only to registered master plumbers, but the plans and specifications and the preparatory details may be taken up by anyone.

When the plans are approved and a copy filed in the Plumbing Office — a marked "Plumbers Copy" and one for the Building Office files given the party taking out the building permit, the "Inspection Record," or "Remodeling Records" is commenced. The data given in when the plans are filed is properly transfererd to the particular record sheet on which all the other data is noted by the assistant inspectors of plumbing and other having to do with the work of watching the work from the beginning to the completion.

For the information of our readers we are pleased to reprint a copy of these records:

These records can be seen to contain when complete, a most thorough sheet of information concerning each particular job—is a permanent record and one which can be referred to at any time by the general public. With a complete set of plans and specifications and a record of this kind, one has something which will be of material assistance to him in the future should there be necessity of making additions, alterations, or repairs of any kind to the plumbing work.

No. St. or Ave. Sec. Lot Sq. Plans filed
Owner Address Plumber
Sewer permit No. issued Examined
Connection by to public sewer in passed Running trap and F. A. inlet in Date
date
Cast-iron sewers. Date from to
" " " " "
" " " " "
Yard drains. Size Area drains. Downspouts. Size
Test on sewer by water. Date (State whether O. K. or leaks)
Terra cotta sewers. Date from to Tested by
T. C. running trap and F. A. inlet in Date
Stacks No. 1. Date No. large outlets Small outlets. Tested by
" No. 2. " " " " "
" No. 3. " " " " "
Lead water service passed from to Date
Galv. iron water service passed from " "
Gasfitting. Date Test
Toilet room light and ventilation

Engineer Dept. file No.
Defects (Date)

Preliminary inspections (Date) Final Certificate
Peppermint test
Date The plumbing and gasfitting in the above premises has been examined and found to be in accordance with the Plumbing Regulations and approved plans I recommend final certificate be issued.
Approved.

Assistant Inspector of Plumbing.

Chief Inspector of Plumbing.

Inspection Record for New Plumbing Work Uesed in Washington, D.C.

No. St. or Ave. Sec Lot Sq. Plans filed
Owner Address Agent Address
Work to be done
Sewer permit No. Issued Examined Plumber
Extension of (Size) C. I. sewer from sewer located to (Date)

Test on Sewer by Water (Date) (State whether O. K.)
Extension of (Size) T. C. sewer from sewer located to (Date)

Running or P. trap and F. A. inlet
Stacks (Date) No. large outlets small outlets Tested by
Lead water extensions from Galv. water pipe extensions
Gas-fitting
Toilet-room, light and ventilation
Request or complaint, Engineer Department File No. (Date)
Conditions (Date)

Preliminary inspection
Work not ready for inspection
Defects

Peppermint test Final inspection Certificate issued
(Date) The work on which the above inspections have been made comprises

Examined and approved.

Assistant Inspector of Plumbing

Chief Inspector of Plumbing

Inspection Record for remodeled Plumb ing Used at Washington, D.C.

There is no charge at the present time for a transcript of plumbing records and to my mind every plumber should make

a copy and file it with his record of the work for future reference.

ABOLISH THE HOUSE TRAP.

The house trap or main trap in the house drain, usually at the front wall, was put in to meet certain conditions which were supposed to exist when the plumbing regulations were first formulated by the Board of Health of New York City, writes W. E. Partridge in the Metal Worker. Plumbing at that time was very bad and leaks into the house from the drain were common in all old work. Those who investigated the matter thought they discovered cases where disease had been carried from one house to another through the main sewer. They therefore determined to isolate each house from the sewer and thus prevent the spread of infection. It is very doubtful whether any well authenticated case in which disease was carried from one house to another has been proven. No such case would be possible with ordinarily tight fixtures and traps which held their seals. The trap was introduced confessedly to meet a condition which no longer exists. In ordinary well-designed plumbing work with tight joints and traps that cannot be siphoned, the house trap is entirely useless. It introduces a great and constant danger of stoppage. When stopped, there is great danger that it will not be closed so as to be perfectly tight when the stoppage has been removed.

The foul air in the house system is much more offensive than that in the sewer. In fact, the sewer air is comparatively pure and is by no means as dangerous as many persons suppose. The worst gases are those generated in the pipes within the house. With the house trap the house system is practically without ventilation, because up to the present time the fresh air inlet is practically inoperative. In New York City not one fresh air inlet in a hundred permits any ventilation. In a few cases where a circulation of air is possible through the fresh air inlet in all the months of the year when the external air is warmer than that within the house, the foul odors of the house system are discharged through the fresh air inlet.

When the house trap is omitted there is a free circulation of air through the pipes all the time. As a result the pipes dry out quickly and there is comparatively little decomposition going on within them. Hence, where the soil pipe rises through the roof and there is the usual trap ventilation, corrosion of lead pipe need not be feared.

When the house trap is studied in all its various applications, and all the reasons urged in its favor have received proper consideration, there is nothing of any weight to be found in its behalf. It was put in as a safeguard against supposed conditions which do not exist, and it is retained because of its prestige of those who made the rules. It adds to the expense of plumbing. It does not increase safety. On the contrary, it is a source of danger, in that when its inlet is thoroughly obstructed ventilation is no longer possible.

The question of ventilating the sewer through the house is one of no importance whatever. We ventilate the streets through our houses without a moment's consideration, and when through tight pipes we ventilate our drainage system, we have removed all cause of danger from them.

TORONTO'S LUXURIOUS PUBLIC BATHS.

The new Harrison public baths at Toronto, which are expected to be ready in October, were the cause of some debate at a recent meeting of the Toronto City Council. The Board of Control had asked council to vote $5,600 for the furnishings and the maintenance until the end of the year. Ald. Foster asked for information as to the cost of running the baths, and Mayor Oliver obtained figures from Property Commissioner Harris. The salaries for a year are estimated at $11,492, and the total cost of maintenance for a year is estimated at $16,592. There are to be three engineers, two matrons, two ticket-sellers and other employees. The ticket-sellers are to sell tickets for the plunge, for which a nominal charge will be made.

Controller Harrison and the Mayor urged council to pass the item in question, and in view of the fact that the baths are almost ready to be opened to the public, the majoriety favored the recommendation.

ARRANGEMENT FOR CONVENTION.

At a meeting on Friday night, Sept. 10, of the Montreal Master Plumbers' Association, J. Laurier presiding, the arrangements for the holding of the National Convention this week were considered. Owing to the non-arrival of replies from the various Provincial Vice-Presidents, no definite programme could then be determined upon, but it was evident that the members were bent on making this convention as pleasant as any that have gone before even though the arrangements be not on quite so large a scale. Invitations have been sent out to all the jobbing and supply houses to attend the convention, and it was decided at the meeting to send letters to all the Master Plumbers to attend and to advertise the date of the meeting in the local papers.

The following delegates from the local association were appointed to attend the convention: J. Griffin, M. J. Quigley, L. Delcourt, W. David. The alternatives appointed were, P. C. Ogilvie, J. E. Walsh, D. Dugas and G. Fontaine.

It was announced that Toronto and Nova Scotia would be represented for certain. It is probable that the amusements will comprise a theatrical party and a trip to Dominion Park. The convention will open at 10 o'clock on Wednesday, Sept. 15, in the Master Plumbers' Rooms, Builders' Exchange, Eastern Townships Building, St. James Street.

NOTES.

Prof. Charles Richet, Paris, France, has devised a means for purifying the air in rooms. According to press dispatches, his apparatus is an air filter which mechanically sterilizes air. Very fine drops of glycerine are scattered along the walls of a cylinder containing a suction fan. Each particle of air drawn in by the fan is freighted with glycerine, and hence tends to drop, thereby carrying with it the germs, dust, and microbes with which it may be laden.

The Montreal Light, Heat and Power Company has announced that it will engage in the ice business, obtaining water from artesian wells and freezing it by electric power into blocks of any desired shape and size, so as to avoid cutting. This is an example which might with advantage be followed by many a smaller plant. Every lighting plant must be capable of carrying a certain maximum load at the time of night when most lights are in use, but for at least 12 hours out of the 24 the load is from half as much in large cities to almost nothing in small country places, where there is little industrial use of electrical power, so that during the greater part of the day much of the capital invested is earning no dividends. The surplus power might just as well be used in making ice and providing another source of revenue, particularly as the time when the "peak" load is of shortest duration coincides naturally with that of the largest consumption of ice.

The Western Canada Agency are contemplating the erection of a large warehouse at Lethbridge. The building will be a three-storey structure and modern in every detail.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

A demand of assignment has been made on Jos. Landry & Co., plumbers, St. Louis (Montreal).

Meecham & Co. have completed their job of installing the new heating plant in the Central School at St. Thomas.

G. B. Woodard, formerly of Wallaceburg, is now located at Comber, where he is conducting a gasfitting business.

The St. Mary's Hardware, St. Mary's, Ont., report having a large number of heating and plumbing contracts on hand.

Hamilton & Stott, St. Thomas, have started on their contract of installing the new pipes for the city's steam distributing system.

The assets of Tasseville & Co., plumbers, Magog, Que., are to be sold.

The assets of J. A. Primeau & Co., plumbers at Montreal who recently assigned, will be sold.

J. H. Woods, late Toronto manager of the Labatt Mfg. Co., was in Toronto for a day this week. It is understood he is interested in Cobalt properties.

E. Hillgartner, the Brantford plumber, steam and gasfitter, who announced a "removal sale" some time ago, opened his new premises, at that place, 61 Colborne Street, on September 2.

At a recent meeting of the Toronto Board of Education the F. Armstrong Company's tender of $212 was accepted for steam-fitting work at Jarvis Collegiate Institute, also one of $110 for the plumbing at the Deer Park school.

Fred Smith, the Guelph plumber, spent last week in Toronto on business.

H. Lendon, Leamington, is negotiating for the purchase of the Wagner Block, at that place. When the deal is put through Mr. Lendon intends moving his entire hardware, plumbing and gas-fitting business to the new premises.

Charles Senecal, a steamfitter working at the Canada Sugar Refinery, Montreal, has been lying unconscious in the General Hospital and will probably die. He was working around one of the steam pumps, when it burst, scalding him about the body and in trying to get away from the spot he fell and fractured his skull. Senecal is 56 years old.

I. Hammond, an apprentice working for Scott & Bennett, the Galt plumbers, had a narrow escape from a bad accident. He was assisting to pipe the Scott & Bennett building on Water Street when he overbalanced and fell to the cellar, injuring his side and arm. In the fall the young man just missed striking a beam. He will be laid up for a few days.

There was a short meeting of the Vancouver health committee the other day, and it was decided to refer the criticisms of some of the master plumbers regarding the new plumbing by-law to council for consideration. There seems to be dissatisfaction both in the health department and the plumbers, and it is apparent that some changes are desirable to meet the conditions.

One of the aspirants for controllership at Ottawa is M. M. O'Connell, the Bank St. plumber. He is well known in the city, and has been requested to stand for election. For five years he held satisfactorily the position of civic plumbing inspector, and three years ago resigned this position to enter business for himself, and has shared in the prosperity of the times.

Mahoney Brothers, the Guelph plumbers, have just completed a good piece of work they were given by the Guelph Parks Commission. The work was the carrying out of an original idea in the way of a fountain in the centre of St. George's Square. There are 92 streams of water thrown up from that number of taps placed at intervals along the pipe that surrounds the cement basin of the fountain, and all the streams are thrown to meet at the feet of the central figure, which stands upon a high base. It is a creditable piece of work.

Brantford plumbers have had an extra busy season this summer. The city engineer's department records show that there were 225 sanitary sewer connections made already this summer, as compared with 195 for the whole of last year. The plumbers, needless to say, are jubilant. The value of the fittings installed, on the average, amounts to higher than in former years, almost all houses being built now having a bathroom and other modern conveniences.

Jas. Watt & Son, plumbers, Chatham, report that they are having a very active season, particularly in out-of-town work. In Wallaceburg alone they have the contract for the office plumbing for the new Empire Refining Co., the contract for heating and electric lighting the Hotel Tecumseh, the plumbing for Geo. Cramer's new livery barns, in addition to quite a bit of residential plumbing. They also have the contract for new plumbing for the Park Hotel in Chatham, and plumbing and heating for the McDonald Furniture Co., as well as a number of Blenheim contracts. They have also been doing some hot water heating work at St. Joseph's hospital, Chatham, and quite a bit of residential work.

Among the attractive displays in the Labor Day parade to-day at Halifax was that of William Stairs, Son & Morrow, wholesale hardwaremen and plumbers. In order to familiarize the public with the quality and the exact line of goods carried, they had an extensively decorated float drawn by two magnificent horses. A wood frame work was neatly built, fitted up with kitchen plumbing. On each side corner of the float stood a forty-gallon copper and galvanized boiler, also an enamel sink, connected with hot and cold water in addition to the pumps. The front section of the float represented a stylish bathroom with all the conveniences, including shower bath with rubber curtain hanging from above, enamel wash basin with hot and cold water, connecting nickel pipes. On both sides of the team painted in colored letters were the words "Eastern Canada Plumbers' Supply House."

STANDARD SANITARY CO. BUY SITE.

The Standard Sanitary Mfg. Company, Pittsburg, have concluded a deal for the purchase of a site for their new factory at Toronto. The property comprises 7¾ acres, and embraces the block of land from Lansdowne avenue to the G. T. R. tracks and from Royce avenue to Lappin avenue.

The erection of the building will necessitate the closing of Ward Street from Royce avenue to Lappin Avenue, and the Board of Control will recommend to the City Council that this section of the street be closed.

The land was purchased from the Canada Foundry Company for $5,000 an acre, making about $40,000 in all. The location is immediately south of the Canada Foundry Co., and a short distance west of the Dominion Radiator Co.'s works. It is also about half a mile immediately north of the King Radiator, Somerville Brass and General Brass factories.

"We will be enameling bath tubs in six months and making a full line of our goods inside a year," said W. A. Porter, manager of the Standard Sanitary Co.'s jobbing business at Toronto. "Our people have built a number of plants in the United States and we are in a position to build and instal the necessary machinery quickly."

James Riordan, it is expected will be manager of the new plant.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Public Buildings.

Contracts have been called for a new wing, to be erected at Kingston in connection with the Hotel Dieu, to cost $30,000. It will be five storeys high.

The Ontario Provincial Government has awarded the contract for the construction of the addition to the North Bay Court House to R. Wallace & Son, that firm being the lowest tenderer. The contract price is $4,300.

Dinsdale & Malcolm, contractors, have broken ground at Victoria, for the new public school building to be erected on Moss Street. The job, which is quite a large one, will take six to eight months to complete. The cost of the building will be about $40,000.

The Dominion Public Works department will, in all probability, erect a new building on the market square at a cost of $150,000. This will necessitate a new market building, which will be removed to Water street if present plans materialize.

At a meeting of the Brantford separate school board, a rough draft of the proposed new separate school building was submitted. It met the ideas of the members, and the committee in charge was instructed to proceed with drawing up the regular plans. The building is to cost about $60,000.

Municipal Undertakings.

About $10,000 is needed to complete Markdale's (Ont.) waterworks system.

A modern waterworks plant to cost over $20,000 is proposed for Fernie, B.C.

A by-law will be introduced to raise $275,000 for waterworks purposes at Richmond, B.C.

The ratepayers of Cranbrook, B.C., will take over the waterworks system at a cost of $70,000.

A by-law authorizing the borrowing of $115,000 for civic purposes has been ratified at Hull, Que.

Exeter, Ont., ratepayers have approved of a by-law to raise $22,000 to instal a waterworks system.

Waterworks extension, costing in the vicinity of $11,000, will be commenced at Portage la Prairie at once.

Yorkton, Sask., ratepayers recently voted in favor of a by-law to raise $20,000 for waterworks extensions.

Work will be undertaken this season on Edmonton's water and sewer connections, at an expenditure of $9,000.

Hamilton ratepayers in January next will probably be asked to vote $150,000 for a new west end sewage disposal plant.

Tenders for the supply of valves, brass goods, lead pipe, etc., are called for by chairman of the Fort William utilities committee.

Collingwood's town engineer, K. S. Macdonnell, will receive tenders for the construction of sewer extensions throughout that town.

Meaford, Ont., town council have been asked to consider the raising of $25,000 or $30,000 for improving the streets and constructing sewers.

A. C. Stewart, Edenvale, Ont., has been awarded the contract for the construction of a sewer system in wards five and six at that place.

James Robertson & Co. have been awarded the contract for supplying lead pipe required by Winnipeg. W. F. Lee has been given the sewer pipe contract.

The Canada Iron Corporation, of Montreal, has been awarded the contract for 1,942 tons of cast iron pipe at $40 per ton, and specials $65 per ton, all f.o.b. cars, Regina.

Winnipeg controllers have recently decided to proceed with the following works: Sewer on Kylemore Avenue, Nassau to John; water main, Klyemore Avenue, Nassau to John.

The town council of Taber, Alta., are asking the ratepayers to support a by-law to raise $55,000 by 20-year debentures for the purpose of the erection and construction of a stand-pipe, water mains and hydrants.

Contracts for building the following Hamilton sewers have been awarded:—Little Peel Street, J. Armstrong, 43c a foot; Wilson Street, from Emerald St. to East Ave., A. Mercer, 74c a foot; Albert Road, J. Armstrong, 47c a foot.

The tender of McVean & Craig, Moose Jaw, for trenching, hauling pipe, laying and caulking, and backfilling trench for the waterworks' new pipe line from compensating basins to the city, at $13,338 has been recommended for acceptance, and the city solicitor was instructed to prepare the necessary contracts at once.

The Clinton, Ont., waterworks committee have awarded contracts for waterworks as follows: Pipe laying, T. M. Cullen, Huntsville, prices ranging from 18c to 30c per foot; cast iron pipes and special castings, Gartshore, Thompson Co., Hamilton, $32.20 per ton; construction of 80-foot stand-pipe and foundation, Hunter Bridge & Boiler Co., Kincardine, $5,000.

The construction at Winnipeg of a 5-mile pipe line from the Red river, to provide a sufficient quantity of water for the great shops being erected for the G.T.P., in Springfield, has been decided upon. Tenders for this pipe will be called for shortly. A pumping station will be erected, capable of forcing the water through the main at high pressure, and in connection with the large reservoir to be erected at the shops, there will be a settling basin.

Contracts for the new waterworks and sewer system at Cobalt have been awarded as follows: Contract "A," supplying cast iron pipe and special castings, Canada Foundry Co., $7,842.40; contract "C," supplying steel stand-pipe, Canada Foundry Co., $2,540; contract "D," supplying vitrified tile pipe and junction, Toronto Sewer Pipe Co., $1,800; contract "E," cast iron manhole covers, London Foundry Co., $526.50; contract "F," labor and certain materials, William Newman & Co., Winnipeg, $38,584.10. Contracts "B" and "G," for supplying hydrants and valves, and for supplying and erecting pumping machinery, were not awarded.

At a recent meeting of the Victoria city council the purchasing agent and water commissioner submitted a report on the tenders recently received for gate valves and cast iron pipe. The tender of A. J. Forsyth & Co., Vancouver, for valves at $2,759.50 was accepted. In view of the attractive offer of I. H. Rickaby, of what is known as Mannesman weldless steel tubes, a committee consisting of the mayor and two aldermen, will pass on the merits of this particular tender. The lowest tender for the cast iron pipe was that of R. Angus, at $48,969, and for pig lead, Robertson, Godson Co. Mr. Rickaby's tender for the same quantity of pipe was $9,394 less than Mr. Angus', while the weight of the tubes is 483 tons, compared to 1,346 tons of cast iron pipe. Should the steel pipe be used only one-half of the quantity of lead will be required.

General Building Notes.

J. Laidlaw, Brandon, will build a $3,000 residence.

Havergall College, Winnipeg, will build a $30,000 addition.

R. B. Harcourt, Toronto, will build a $10,000 brick store.

Sir John Boyd is erecting a $12,000 residence at Toronto.

W. H. Osterhout will build a $3,000 house at Winnipeg.

The Bank of Toronto will erect a new building at Kingston.

The Queen's Hotel, Montreal, will be enlarged by a $40,000 addition.

The C. P. R. will erect a tourist hotel on Kootenay lake the coming winter.

A $15,000 dwelling will be erected by Mrs. F. M. McDonald at Winnipeg.

A permit has been issued to J. S. Gibson for a $4,000 residence at Victoria.

An $18,000 business block will be erected by Dr. J. T. Kidd, at Ottawa.

Battell Bros. and John Lindsay will erect business buildings at Moose Jaw.

An apartment block to cost $10,300, will be built at Ottawa, by Crown & Joyner.

An apartment building to cost $42,000 will be erected at Winnipeg by W. Preston.

A. J. Woodward will build an apartment block at New Westminster to cost $85,000.

John Gunn & Sons are to erect at Winnipeg a terrace of stores to cost $9,000.

A fireproof building will be erected at Vancouver by G. E. Hower at a cost of $145,000.

Two pairs of dwellings to cost $12,000 will be erected by Ausman & Marshall, Toronto.

Improvements to cost $110,000 will be made to the Rideau Club building at Ottawa.

Three dwellings are to be built at Toronto at a cost of $10,000 for F. Courtmanche.

S. Bourdeau was granted a permit to build two houses at Montreal to cost $10,000.

Three pairs of dwellings will be built at Toronto by Jas. Sieveright, at a cost of $10,000.

Four duplex dwellings will be erected at Winnipeg by R. S. Bickle at a cost of $19,000.

A permit has been issued at Winnipeg to J. S. Dismorr for the erection of a $46,000 business block.

R. Seymour, Winnipeg, will build a dwelling costing $3,000 and T. E. Darbey a dwelling, costing $4,700.

H. Mitchell, Winnipeg, has taken out a permit for the erection of a residence at an estimated cost of $5,000.

A new three-storey brick building is to be erected at Victoria by Bannerman & Horne. The cost will be $22,000.

Contracts for the erection of six handsome dwellings in Fairview, B.C., have just been awarded by the C.P.R.

Love Bros., Toronto, have obtained a permit for the erection of ten attached stores and dwellings to cost $40,000.

W. F. Cooper, local manager at Petrolia, has the plans for the new branch of the Bank of Toronto, to be erected in that town.

Plans for the new Y.M.C.A. at Victoria, have been completed by H. S. Griffith, architect. Tenders will be called. in November.

D. MacDonald, house, $3,000, B. Shers, house, $3,500, and Axel Nordgren, house, $1,200, are three recent building permits issued at Winnipeg.

The Robert Simpson Company, Toronto, is putting another addition to the company's big store, similar to the other portions at a cost of $40,000.

Recent building permits at Brantford include : M. E. Dean, brick dwelling ; Charles Besant, brick cottage ; W. W. Bell, brick dwelling, $2,500 ; J. D. Caton, brick house, $2,000.

The first sod was turned lately at Peterboro for two stores, erected by Taylor Bros., of Toronto. They are only two of a block, which Taylor Bros. purpose erecting next year.

A large club house will probably be erected in the district north of Macdonald, Winnipeg. Wm. Whyte, vice-president of the C.P.R. is said to be interested.

J. Rogers will build a $10,000 residence at Vancouver. Other houses going up there include two dwellings for Whicker & Ives, $6,000 ; and a house for A. B. McCandless, $2,000.

The Esquimalt Water Works Co. are calling for tenders for the supply of about nine hundred tons of cast iron socket pipes and special castings. Sealed tenders must be in before Sept 15.

The Provincial Government has awarded the contract for the construction of the addition to the North Bay Court House to R. Wallace & Son, that firm being the lowest tenderer. The contract price is $4,300.

Building permits were issued at Victoria, by the building inspector to Charles E. White, who will erect a dwelling to cost $1,100, and to Mrs. A. E. Thompson for a dwelling to cost $475.

Since the beginning of August the permits at London have numbered 12, with a value of approximately $15,000. The most important building was that to be erected by A. E. McClary at the corner of Queen's avenue and Colborne street, to cost $12,000.

Building permits have been issued at Quebec for construction of $3,000 building for O. Drouin; $3,000 building for Mrs. Grenon; $5,000 building for Mr. Maguire; and $3,000 building for Ls. Dechere.

The Imperial Construction Company of Toronto, has been awarded the contract for the erection of a new Canadian Northern Hotel at Port Arthur. It will cost a quarter of a million. Work will start right away.

W. A. Elliott, Brandon, has just completed plans for the erection of a 40-room hotel building at Broadview for T. F. Lyons & Son, of Whitewood. The truth in it. My protest is only against cost is in the neighborhood of $20,000.

A new annex will be added to the Montreal City Hall for the use of the police, Recorder's Court and Health Department. The cost of the new building will be in the neighborhood of $200,000.

The Toronto Board of Control awarded the contracts for the new Perth avenue fire hall. They amount to $21,762 ; the plumbing and gas fitting contract was secured by Keith & Fitzsimmons, $943 ; hot water heating, Toronto Furnace and Crematory Co., $977 and electric wiring, the Federated Electric Construction Co., $210.

There is at present being constructed in Victoria one of the largest business blocks on the coast. This is the building being erected by Pemberton & Sons. Though only seven storeys high including basement it is larger than the fourteen storey Dominion Trust Building in Vancouver.

The London Water Commissioners have selected a site for the combined water and power station. The council have finally passed the water by-law to expend $123,700 for the artesian wells, pumping and power distribution plants on Horton streets, effecting a saving estimated at $4,000 per annum.

Recent building permits have been issued at Saskatoon to W. Brown, house $1,900; E. S. Anderson, residence, $5,000; F. S. Cahill, brick block, $8,000; C. H. Gillespie, residence, $3,500; Mrs. C. H. Horan, house, $1,800; F. Clears, house, $2,000; A. Mason, residence, $3,000; T. Houlding, house, $1,500; C. J. Hanratty, house, $1,500; G. V. Tupper, house, $1,500; Collegiate Institute buildings, $91,000.

PLUMBING AND HEATING MARKETS

MONTREAL.

September 14.—There is still a heavy call on plumbing and heating lines, and supply houses are working at full pressure to get the orders off. With stocks in users' hgnds, light material is wanted immediately, and this of course makes jobbers more busy than they would be in ordinary circumstances. All lines are going well, especially soil, iron and lead pipe, and boilers and radiators. Not only are the local orders good, but heavy consignments have been dispatched to outside points. In fact all the way round there is a general improving call, and it looks as if the need for material will be felt right through the fall. In fact, it is anticipated that later in the month the demand will be even heavier than it is now.

Building is being pushed forward very vigorously, and in consequence plumbers have plenty of work on hand, and there are now very few shops which are not fully employed. A good tone thus predominates the plumbing market, and this is reflected in all lines of goods.

Soil pipe is still very hard to obtain, although manufacturers are working at full pressure to supply the demand. There is little chance of any stock being accumulated while the call keeps up. Prices are firm all round and there is a most general feeling of satisfaction at the way things are shaping.

SOIL PIPE—Soil pipe is still hard to procure, and will continue so as long as the present demand is maintained. Manufacturers are working at full pressure, but there is much leeway to make up. Orders for heavier bulk are coming in daily, not only locally but from country points. The markets keep very firm, and we quote light 60 off, medium and extra heavy 70.

LEAD PIPE—The heavy demand keeps up. The material is wanted at once and jobbers are thus kept very busy. The supply is sufficient for the demand at present but it would be advisable for users to look ahead a little as to their probable requirements. The market is firm, and we quote pipe and waste at 27½ off ; traps and bends at 50 ; caulking lead at 5c per pound.

SOLDER—Solder is very firm at 19½c for half and half, and 18½c for wiping. The demand from roofers grows heavier as many houses started late in August are now ready. The jobbing demand is also good.

IRON PIPE—The demand continues heavy, and delivery is hard to obtain in some sizes. The market is firm in tone, and we quote : ¾-inch to 4-in., black, 72½ off ; galvanized, 62½ off.

RADIATORS AND BOILERS — Orders are coming in very rapidly, and supply houses are satisfied with the trend of trade. There has been a great development in the local call, while outside points have also been active buyers. The market is firm, and we quote 50 and 10 off.

BRASS GOODS—The market is firm and the demand improving. Good lines continue to move best. We quote : Compression work, high grade, 70 and 10 off ; standard, 70 ; fuller 75 off.

ENAMELWARE—The demand for enamelware will be strong until the first of the year, owing to so many buildings and residences being started late. All jobbers report excellent business, with stocks light owing to the heavy demand. Manufacturers are working a full pressure, but are only able to supply immediate requirements. Prices are firm and unchanged.

PIPE THREADING TOOLS—Owing to conditions last fall the trade were not then buying the latest inventions in labor-saving, but made their old tools carry them through. With the improvement in trade, the demand for high grade and most improved pipe-threading tools has greatly improved, and supply houses are hard put to keep up with the demand. In fact manufacturers are running at extreme pressure. A record season is anticipated in the pipe-threading tools.

METALS—Owing to fall in the English market, tin has been cut ½c. Lead also received a cut of 10 per 100 lb. Copper is somewhat weaker but unchanged. We quote : Ingot copper, 14½c; ingot tin, 33c ; lead, $3.45 ; pig iron, Middlesboro No. 3, $16.50 to $16.75; Summerlee, $18.75.

TORONTO.

Sept. 14.—Demand has been somewhat light for city business during the past fortnight, but country trading has been better than usual. The exhibition is responsible for both these features. It brought a number of out-of-town plumbers who wished to combine business with pleasure, and some fair orders were placed.

City plumbers state that new work is not so heavy as during August, but that there is more money being made on current work than at any time for a year back. Supply houses report a brisk demand for enamelware, particularly baths and pipe of the smaller sizes.

Prices are unchanged in plumbing goods, though brass founders have issued a new price list showing somewnat of an advance. Until the discount sheet is put out, however, what that advance will amount to cannot be stated. Solder is firmer.

ENAMELWARE—Baths are the particular goods wanted in this line, and they of the larger size and better quality—one indication of a better feeling in the business world. Sinks and closet combination are close seconds, the latter goods having somewhat slightly the inside track. Prices are unchanged. Whether the new factory to be started in Toronto and the rumored amalgamation of two older concerns will have a bearing on prices is purely guess work just yet, supply houses being canny about hazarding an opinion.

IRON PIPE AND FITTINGS—With stocks low in the smaller sizes and demand just as great as ever, the pinch is being felt by master plumbers holding contracts for new work. Rolling mills in Canada cannot turn out the quantity required fast enough, and the same condition prevails across the border. Through it all prices are unchanged though as is to be supposed the market is firmer than for many moons. Galvanized pipe is $6.19 for 1-inch size, and black pipe is $4.54 for the same size. Malleable fittings are going out well. They are at 40 per cent. discount. Cast iron fittings are at 65 p.c. off.

BOILERS AND RADIATORS—Booking has let up considerably, but the shipment of orders is increasing and foundries are busy getting out heating goods. Steam boilers are 60 and 10 ; hot water boilers, 50 and 10 ; wall and hot water radiators, 50 and 10 ; steam radiators, 50.10 and 2½ per cent. ; and angles and curves, 25 per cent., the unchanged prices from last quotation.

LEAD PIPE—Demand is again light. Some pipe is going outside the city on orders placed during the fair, but locally business is a trifle slow. Pipe and waste are 27½ p.c. ; traps and bends, 50 p.c. ; and calking lead 4½ cents a pound.

SOLDER—Though the quotations are unchanged the market for solder was much firmer during the past two weeks. Stocks are not so great as was the case all summer, still supplies are free. Wiping is 18½ cents and half-and-half 19 cents.

BRASS GOODS—At the meeting of brass manufacturers of Canada and the United States held at Detroit at the beginning of the month a new set of prices was submitted to the convention by the secretary, and they were unanimously adopted to go into force immediately. Although the new list bears the date of September 1, the new discount sheets are not yet issued so what the definite changes are cannot be stated. It is understood, however, that a slight general advance is made on practically everything. There is one good feature of the new list by which plumbers wanting broken dozen lots may have them at an exact proportion of the cost of dozen lots.

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In the northern section of Seattle may be seen one of the strangest houses, to be occupied by a family of seven children and their parents, that can be found in a thickly settled community. John Seivert recently went from Iowa to Seattle with a large family and a little money. On account of the demand for houses he was unable to rent a house suitable for his needs, and bought a lot in a section of the city from which the timber had been cut. He found half of the lot was taken up by a gigantic cedar stump measuring 30 ft. high, 18 ft. in diameter and 10 ft. above the ground.

With an augur and saw Seivert cut out a 7-ft. section from the south end and walked into his stump. The walls were found to be 15 in. thick and the whole stump was a hollow shell. He cut windows, laid a tight floor and made a ceiling of planking and flooring.

With a ladder he cut another door 12 ft. above ground, went inside and made the windows for the second story. The third story was constructed and a tight roof of sniplap and shingles was made over the top.

Seivert peeled off the bark and painted the stump a light green and the window and door frames pure white. The whole makes a very pretty home at a cost of only $40, and the owner has refused $2,500 for his unique abode.

A hot water heating system is used at the Central Railway Station, Melbourne, Australia, and comprises some 223 radiators fed from three cast iron sectional boilers, involving about 8000 ft. of piping. The building is 700 ft. long but only 30 ft. wide. According to the "Ironmonger" of London, it is the largest heating system of the kind yet carried out in that city.

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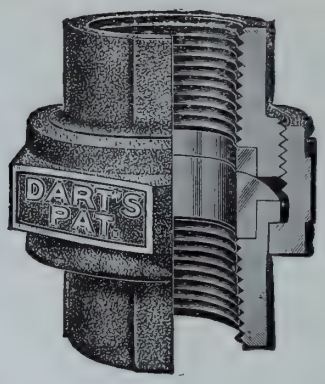

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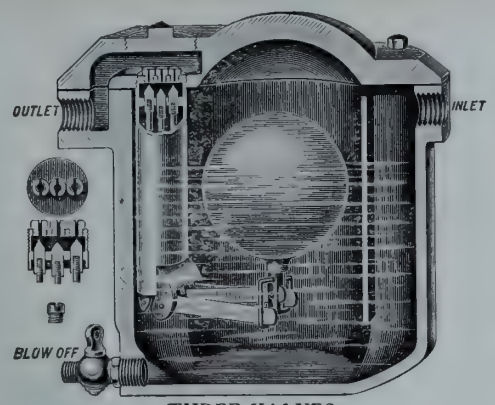

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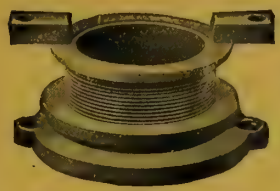

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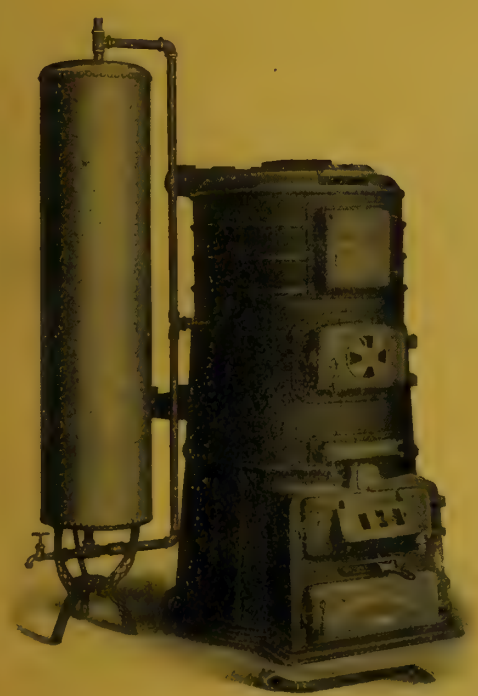

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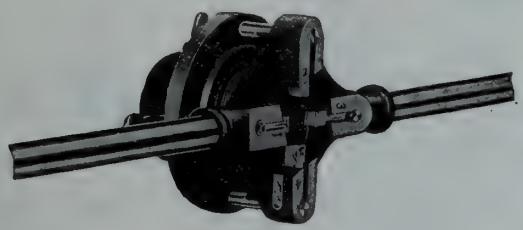

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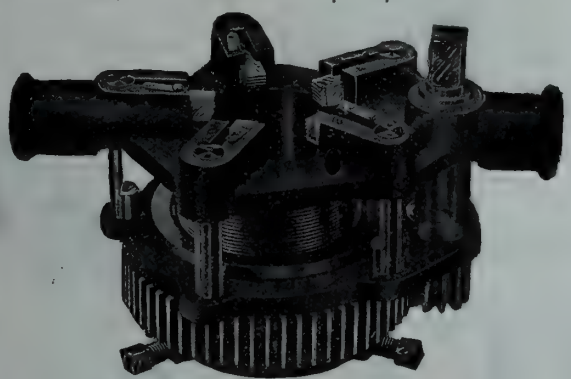

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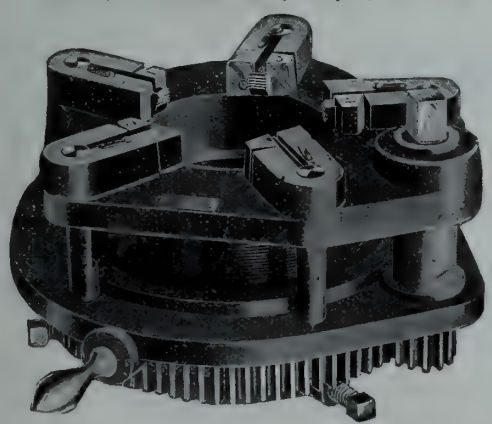

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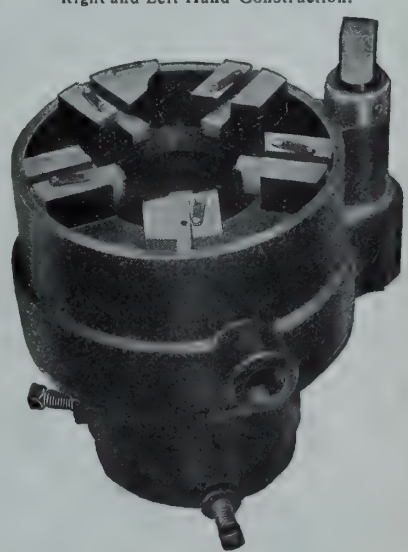

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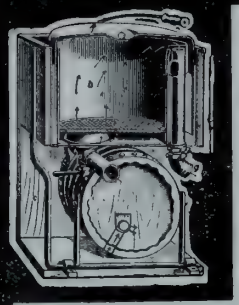

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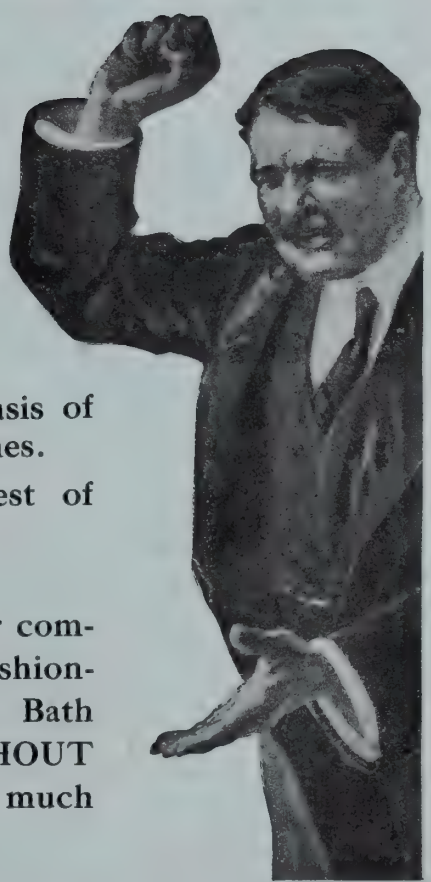

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TORONTO, OCTOBER 1, 1909

A SUCCESSFUL CONVENTION.

No Canadian convention of master plumbers in recent years has been so hopeful in its results as the fourteenth annual convention held a fortnight ago at Montreal. The meeting was favored with the attendance of men of energy and foresight, and the result is that a progressive policy was outlined, which, if carried out, is bound to raise the organization in the estimation of the public, as well as meet with the approval of the supply men, and do much to renew hope in the minds of many master plumbers who were beginning to despair of the possibility of doing anything to lift the trade out of the slough it has been traveling in for the past two or three years.

Undoubtedly the most important question receiving the consideration of the delegates was the suggestion brought forward by Ex-President Powers, that the present plan of organization be abandoned and an act of incorporation be secured from the Dominion Government for a new organization to be known as the "Canadian Society of Sanitary and Heating Engineers." It is to be hoped that the committee having this matter in hand will be successful in securing the desired legislation and that matters will be sufficiently advanced to allow the old association to disband and the new society be organized at the convention to be held at Toronto next August.

Under the new plan of organization the work of the society will be educational and up'ifting, the chief effort to be made being in the direction of securing legislation requiring the establishment of provincial boards of examiners for master plumbers and the provincial licensing of all plumbing firms. The various provinces, it is also suggested, should include a master plumber on every Board of Health, and give greater power to the Provincial Boards of Health, making it possible for them to enforce proper sanitary measures in such places as Cobalt, where disease has been rampant as a result of the utter neglect of modern methods of sanitation, and such cities as London and Hamilton, where the influence of large property owners has prevented the appointment of plumbing inspectors, with the consequent result that competition for cheap jobs has lowered the standard of work done, besides tending to demoralize the working plumbers and encourage them to adopt cheapness instead of quality as their business yard-stick.

So far the work outlined will be largely in the interest of the general public, but it will also have an influence for good upon the master plumbers themselves, inasmuch as the adoption of the new name will tend to give the plumbing trade standing as a craft of similar importance to that of the architects. As a matter of fact, the work of the modern plumbing and heating contractor is that of an engineer, rather than a mechanic, he designing systems of sanitation and heating for which the architect, as a rule, secures credit. It is time that the master plumber discarded the name which signifies a "worker in lead," and adopted one more in keeping with the nature of his work.

The proposed change has still another phase. With the disrepute, earned or unearned, attaching to the name of "master plumber," few in the trade would desire to advertise themselves as "members of the Master Plumbers' and Steamfitters' Association." There would not be the same objection to adding on a firm's letterhead the words, "Members of the Canadian Society of Sanitary and Heating Engineers." And for the same reason men who would hesitate to join an organization bearing the first-mentioned title would be the first to enroll into a Society of Engineers organized to do educational work in the cause of better sanitation and more scientific heating and ventilation. The best men in the trade, those really doing engineering work, would join the new society, while the mechanics, the so-called sidewalk plumbers, would continue as at present, although the advanced legislation secured, the compulsory examinations, etc., would eliminate from the trade the incompetent ones who are unable to meet the standard of requirements set.

The proposed changes should meet with general approval, and provinces not already organized could, to advantage, re-organize under the new name.

A MERGER NOT A COMBINE.

The Toronto Daily Star has again rushed into print to call the merger of the Standard Ideal and Amherst Foundry Companies "a plumbing combine," going on to suggest that the duty on enamelware be abolished as a result of the amalgamation of these two companies.

The "Star," in its desire to play to the gallery, conveniently forgets that the enamelware market in Canada has always been controlled by the United States producers of these goods, and the Canadian tariff has never been high enough to keep United States firms from shipping their goods into Canada. The duty has, on the other hand, given Canada two large enamelware plants at Port Hope and Amherst, and is now encouraging the Standard Sanitary Manufacturing Company to build another big plant at Toronto.

The building up of these industries is undoubtedly an advantage to Canada, while it has also resulted in shutting out much of the second and third grade goods form-

erly dumped into Canada, and encouraged, instead, the production and use of goods of a much higher quality.

The "Star" would apparently prefer to have Canadians using the products of United States factories, rather than having the Canadian demand for enamelware supplied by Canadian workmen.

The "Star" need not worry about competition in enamelware being done away with in Canada, as there is every likelihood of there being a warm fight for enamelware business in Canada during the next few years.

NEW TRADE TERMS ADOPTED.

The Toronto plumbing supply houses have adopted new selling terms which ought to meet with general approval, although there is a shortening of credit all along the line. In the past terms have been "two per cent., 30 days and 90 days net," the 30 days being considered to mean that on any goods bought in September payment would be due November 1.

The new terms are "2 per cent. 30 days from the average date of invoice, and 60 days net." This means that if a master plumber buys three bills of goods, on Sept. 4, 14 and 30, payment will be due on Oct. 16, this being 30 days from the average of the three September purchases. It will be further noted that the net terms are now two months, instead of three. In the case of one firm, the Ideal Manufacturing Company, Detroit and Windsor, terms are "two per cent., 10 days, and 30 days net."

This shortening of terms will tend to make master plumbers more active in making collections, and those who are lax in their business methods will have to modernize their system or go out of business. The change of net terms from 90 to 60 days will also assist the firms doing a legitimate business, by making it harder for "sidewalk" plumbers to get goods on long terms, take contracts at cut prices, do the work and jump to parts unknown, thus hurting the legitimate plumbers in two ways, by their demoralizing price-cutting methods and by leaving unpaid accounts at supply houses, for which the latter will have to make up out of sales made to firms who pay their accounts regularly.

Still another change is noted in the announcement made by the supply houses. In future sales will be made "ex-warehouse," instead of "f.o.b. Toronto." In the past, it is said, some supply houses have been allowing cartage at point of shipment to all or to some favored customers, but the decision now is that all jobbers are to have cartage from their warehouses to the freight sheds charged on customers' bills, just as the freight is now charged to the purchaser. There may be an honest difference of opinion as to who should pay cartage at point of shipment, with strong arguments on both sides of the question, but there can be no ground for dissatisfaction if all the supply houses hold to their agreement and treat all customers alike, as the charge, in the ultimate, is one which will have to be paid by the consumer.

The New York Legislature last year appropriated $70,000 for preventing diseases of domestic animals and $10,000 for educating the people in the prevention of tuberculosis, a disease which causes 15,000 deaths every year. Seventy thousand dollars for animals and ten thousand for the people! It is easy to see which life is considered the more valuable. Cattle have monetary value, while human life has not.

OFFICIAL NEWS

N. A. M. P. & S. F. of CANADA

OFFICERS 1909-10

President,—Joseph Laurier, Montreal. Vice-Pres.,—G. H. Cooper, Toronto.
Treasurer,—H. Mahoney, Guelph. Secretary,—H. W. Munday, Montreal

Provincial Vice-Presidents,—Nova Scotia, Frank Powers, Lunenburg; New Brunswick, Wm. Watson, Moncton; Quebec, J. E. Walsh, Montreal; Ontario, R. J. Shannon, Toronto; Manitoba, R. L. Beattie, Winnipeg; Alberta and Saskatchewan, E. J. Young, Calgary; British Columbia, John Colbert, Victoria.

Chairmen of Committees,—Legislation, H. A. Knox, Ottawa; Sanitary, P. C. Ogilvie, Montreal; Apprenticeship, J. Griffin, Montreal; Essay, E. Russell, London.

Next Convention, Toronto, last week in August, 1910.

LETTER TO MASTER PLUMBERS.

Fellow Craftsmen,—The editor of Plumber and Steamfitter has placed this column at the disposal of our association for official news, and I desire to use it to the fullest advantage, consequently, taking this first opportunity of thanking the members of the association who assisted myself and the other officials in making this year's convention such an improvement over the one held a year ago. I also want to ask the co-operation of master plumbers in all parts of Canada in making it possible to have next year's convention at Toronto, show as great an improvement over this year's gathering as it was over 1908 meeting.

I would like to have a letter from every firm in Canada which is favorable to a reorganization of the trade, and would particularly like to hear what they think of the proposed change in name.

Read the report of the convention in this issue of Plumber and Steamfitter, and them write me a short letter giving your views on the various questions discussed. The more letters I receive the better work I will be able to do as secretary.

H. W. MUNDAY, Secretary.

Montreal, September 25.

VANCOUVER PLUMBERS ORGANIZING.

The master plumbers are endeavoring to form an association, and held a meeting to consider the matter on September 24. C. Griffith, the secretary, is now calling on the plumbers and will report at a meeting to be called shortly.

The new plumbing by-law of Vancouver, which was published in Plumber and Steamfitter of September 1, is being adversely criticized by many of the plumbers in that city. It is not because of the provisions so much as that due notice was not given. For instance, plumbers have been caught with a stock of grease traps on hand, which, under the new regulations, will be of a wrong size. Generally speaking, the by-law is favorably regarded, except in the case of stocks being left on the hands of dealers.

MONTREAL'S HEAVY DEATH RATE.

During the week ending September 11, the week before the master plumbers' convention at Montreal, there were 120 deaths, and of these 74 were of children under five years of age. There is something wrong in a city where its young are slaughtered in such numbers. If it is bad sanitation, bad water, or bad plumbing, there is work ahead for the Montreal Master Plumbers' Association.

Fourteenth National Convention of Master Plumbers

Meeting at Montreal, September 15 and 16, Attended by Twice as Many as Last Year's Gathering—Four Provinces Represented by Delegates — Decide to Incorporate Under Dominion Charter and Re-organize Under the Name of the Canadian Society of Sanitary and Heating Engineers—Strong Effort to be Made to Re-organize Ontario Along Similar Lines and Next Convention to be Held at Toronto—New Officers Elected.

Once again the National Association of Master Plumbers, Steam, Gas, and Hot Water Fitters of the Dominion of Canada assembled in Montreal for the purpose of their fourteenth annual convention. It was hoped at the last convention that Toronto would be in such good shape that the members could meet there this year, but with no active organization in the Ontario city as yet, and as no other place could be found suitable, the Montreal Association again came forward and invited the delegates to visit the city for its fourteenth annual meeting. The holding of the "Back to Montreal week" was thought to be a good opportunity for the event, and as it happened the date of September 15 and 16 was admirably fixed. The city wore a holiday look, entertainments were going on in all directions, and this combined with the hospitable reception afforded the delegates from the local association and the supply houses, made the meeting one of the most enjoyable ever held, while the business-like way in which the members grapp'ed with the items on the agenda made the convention rank among the most successful in the history of the association.

JOHN A. GORDON, MONTREAL,
Retiring President.

Compared with last year, the attendance showed a hundred per cent. gain and besides it was certainly as representative as any ever held, while there is no doubt that the deliberations will not only strengthen the ambitions of the

JOSEPH LAURIER, MONTREAL,
The New President.

association, but greatly help in the elevation of the master plumber and of his industry to their proper place among the arts of the country.

WEDNESDAY MORNING.

In good time on Wednesday morning the delegates assembled in the fine room of the Montreal Master plumbers, Eastern Townships Bank Building, being welcomed by many local friends. The room not being large enough for the purposes of the meeting, the Builders' Exchange, who occupy the whole flat, placed their board rooms at the disposal of the convention.

J. Laurier, on behalf of the local association, welcomed the delegates. He was sure that good helpful business would be done, and he wished them all a happy time. The reception committee would be sure to look after them properly.

President John A. Gordon replied, and voiced the appreciation of the delegates in coming again to Montreal, and for the greetings so kindly tendered by Mr. Laurier.

It was then carried that the two representatives of The Plumber and Steamfitter of Canada, and the one representing the Plumbers Trade Journal, New York, be allowed to attend the meetings.

J. E. Walsh, Montreal, was appointed sergeant-at-arms, and the meeting forthwith plunged into the routine work of selecting the various committees.

Committees Appointed.

J. Laurier, F. Dexter and D. Dugas were named as a Press Committee; John Watson, W. David and W. Ryan, the Credential Committee; Frank Powers, J. Laurier, and G. H. Cooper, the Resolutions committee; M. J. Quigley, J. E. Walsh and L. Delcourt, the Select Committee, and R. J. Shannon, G. H. Cooper and W. Watson the Auditing Committee.

This closed the first part of the general business, and an executive meeting was then held with President J. A. Gordon in the chair. Last year the executive meeting was merged, for the purpose of accelerating business into the ordinary session. This time, however,

GEORGE H. COOPER, TORONTO,
Elected National Vice-President.

the executive meeting was held in due form. The minutes of the last convention as reported in The Plumber and

HARRY MAHONEY, GUELPH,
Re-elected Treasurer.

Steamfitter of Canada, were read, and other detail business dealt with.

WEDNESDAY AFTERNOON.

Resuming the ordinary session in the afternoon, the Credential committee reported the attendance of the following delegates and visitors:

Montreal—John A. Gordon, Harry

H. W. MUNDAY, MONTREAL,
Re-elected Secretary.

Munday, Joseph Laurier, John Watson, D. Dugas, W. David, L. Delcourt, A. Pope, Walter Ryan, M. J. Quigley, P. C. Ogilvie, J. E. Walsh, T. Christie, J. Griffin, J. Atchison, James A. Sadler and L. J. Conroy.

Toronto—George H. Cooper, R. J. Shannon and Alex Purdy.

Guelph, Ont.—Harry Mahoney.
North Bay, Ont.—J. E. Farrell.
Kingston, Ont.—J. M. Elliott.
Quebec, Que.—F. Gingras.
Moncton, N.B.—Wm. Watson.
Truro, N.S.—Frank Dexter.
Lunenburg, N.S.—Frank Powers.

The Plumber and Steamltter of Canada was represented by Weston Wrigley, Toronto, and F. J. Arrowsmith, Montreal, and the Plumbers Trade Journal by F. H. O'Connor, New York.

The reports of the various officers were then received and referred to the Resolutions Committee.

President Gordon's Report.

"On looking through the work of the year casually it would appear that a master plumbers' association was useless and considered as of no benefit by the master plumbers in general, but when one reads the reports and letters of enquiry from many of the local associations, you will realize that underneath the surface appearance of indifference there is still a spark of the old enthusiasm which I hope to see fanned into flame, so that from end to end of our grand old Dominion, master plumbers' associations will be known and the members recognized as the leaders in social as well as sanitary measures.

"I am pleased indeed to be able to say, that after some three years of uphill work, Ontario is again coming to the fore and I believe that the 15th annual convention will be a record breaker for attendance from the Ontario association.

"The reports that have been received from other provinces are also very encouraging; from P.E.I., N.S. and N.B. in the east to Manitoba, Alberta and Saskatchewan in the west, all the national-provincial officers are working on the lines, of master plumbers only, to execute plumbing work and so keep up the standard of sanitary appliances and workmanship to the highest point of efficiency which has so often been deteriorated because the workman was incapable and the material defective or improperly installed.

"I would again bring before the association the absolute necessity of a Dominion Act of Incorporation which would be effective in every province. This would give up greater power in dealing with labor troubles which so constantly occur, and also place us in a position to combat and overcome any difficulty either financial or legal which might arise in a local association. In closing, I wish to thank the officers, and Secretary Munday especially, for the help they have given me during the year.

"Thanking you for the honor conferred on me at the last annual convention and trusting that we will all derive much benefit from the interchange of ideas and the reports which have been read."

JOHN A. GORDON, President.

Vice-President Laurier's Report.

"The Executive met three or four times during the past year and the proceedings proved very interesting. Undoubtedly good support would be af-

A GROUP OF DELEGATES AT THE MONTREAL ROLLING MILLS.

Joe Laurier, George Cooper, J. Labrecque, J. A. Gordon, F. Dexter, John Watson, Harry Mahoney, Harry Munday, Frank Powers, J. E. Farrell, W. Maguire, R. J. Shannon and the Editor of the Plumber and Steamfitter.

forded the National Association by strong by-laws enabling all local associations to be formed under the same rule and regulations. This would be

WM. WATSON, MONCTON,
Elected Vice-President for N. B.

a way and means to avoid bad competition, such as in the case of those who are not qualified master plumbers starting plumbing establishing.

"I believe that one way of doing this would be to have by-laws regulating that all master plumbers should pass an examination as sanitary engineers. I believe that such by-laws would be satisfactory to all local associations and more successful and a greater encouragement to the National Association."

JOSEPH LAURIER, Vice-Pres.

Secretary Munday's Report.

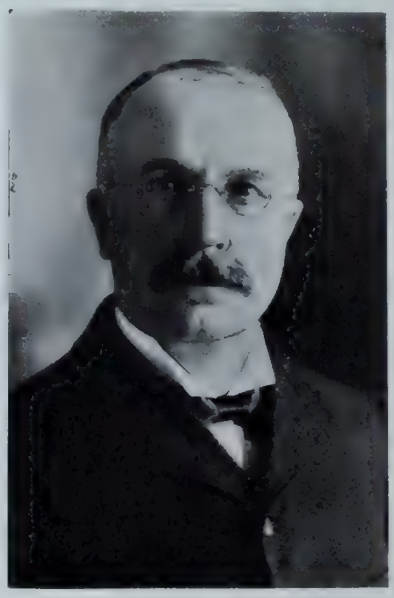
"This year like the last has been a most trying one. But I now feel the association has passed the crisis and is well on the road to success. I have not been as busy as I would like to have been, the great fault being some of the members did not answer their correspondence. This is very discouraging to any secretary as a great deal more good can be done if letters are answered promptly. I have received during the year 32 letters and written 56, besides sending out several hundred circulars.

"Before closing I wish to thank The Plumber and Steamfitter of Canada for the assistance they have given me during the year and must also specially thank Mr. Wm. Knight, of the Amherst Foundry Co., Amherst, N.S."

H. W. MUNDAY, Secretary.

Ontario Vice-President's Report.

"I have much pleasure in reporting to you on Ontario, for the past year, althought it is not very encouraging, I hope that the next year will be better. When you saw fit, at your last convention, to appoint me vice-president for Ontario, I was holding the position as secretary of the association in Toronto, which was then composed of a few that got together after a strike of one year to try and get the plumbers in that city, into the association. But after nine months' hard work, and spending nearly $400, we had to give it up as a bad job. During that time I sent out letters to other plumbers in the province, but the result was the same as in Toronto, none seemed to have any back bone for associations. I also tried by writing a couple of articles in The Plumber and Steamfitter, but they were not of much avail.



FRANK POWERS, LUNENBURG,
Elected Vice-President for Nova Scotia.

"Fort William and Port Arthur, however, have secured from me a constitution far an association, and from the last report I received, their association is in first class shape.

"I tried to get the plumbers of Ontario to meet at Windsor, when the N.A.M.P. of the United States were holding their convention in Detroit in June, and see if we could form an association, but out of over a hundred letters I sent out, I got only five answers, which was so discouraging that I called the meeting off.

"During my term of office I have mailed to plumbers in Toronto and throughout Ontario some eighteen hundred circular letters, and only received twenty replies. And by this it looks as if some plumbers are too busy to write, or they have not the courtesy to answer any letters with reference to an association.

"Just to give you some idea of this, I sent out one hundred and fifty letters regarding this meeting and only received seven answers. But I want to thank those who have sent replies, as some of them were very encouraging."

GEO. H. COOPER,
Vice-President for Ontario.

Nova Scotia Vice-President's Report.

"The Master Plumbers' Association of Halifax and vicinity having been in existence for the past fifteen years, and having contributed much to the welfare of the master plumber, it was decided that this association be incorporated under the name of the Master Plumbers' Association of Nova Scotia.

"On March 24 action was taken for the purpose of obtaining such measure, and on April 23, application was made, and the act was passed by the Legislature and became law. On April 27, a meeting was held and the following officers were appointed for a term of one year: James Farquhar, president; George A. Perrior, vice-president; George Kinsman, treasurer; George B. Hillis, secretary. At this meeting the following resolution was also adopted:

> Whereas in the past the Master Plumbers' Association of Halifax and vicinity has been of much practical and commercial benefit to the trade, and

FRANK DEXTER, TRURO,
Retiring Vice-President for Nova Scotia.

> Whereas the co-operation of all master plumbers' doing business in Nova Scotia and Cape Breton would greatly add to

the efficiency of this association, be it

Resolved that all master plumbers throughout Nova Scotia and Cape Breton be respectfully requested to become affiliated with this association for the further advancement of their calling in all its branches, and that the secretary be requested to obtain the names and addresses of all master plumbers, and write them enclosing a copy of the rules and by-laws of this association, asking for their hearty co-operation in this undertaking.

J. E. WALSH, MONTREAL,
Elected Vice-President for Quebec.

"It was also decided at this meeting, that any former member of this or any similar association, be reinstated in this association by the payment of $3 dues and $6 capita tax for the current year.

"We received several replies to this letter but regret owing to the natural apathy of the majority of the master plumbers, we did not increase our membership. Nevertheless, I believe that our association being now on a solid foundation, will in time increase its membership, and all master plumbers' will get together for their own protection."

F. DEXTER,
Vice-President for Nova Scotia.

Report from New Brunswick.

"Being appointed to take the place of D. J. O'Shea, Fredericton, as provincial vice-president, I am sorry to say I cannot make a very favorable report for our province.

"There has been abundance of work in our town and I hear that things are very busy in St. John, Fredericton and Moncton. St. John City has four firms having regular places of business with many doing business without shops. Moncton has three regular plumbing establishments with one hardware concern which does plumbing and heating, while at the same time doing a jobbing business. Besides those there are a number of sidewalk plumbers being supplied by this hardware firm."

WM. WATSON,
Acting Vice-President.

Report of Select Committee.

"We have carefully examined all correspondence that has passed between the secretary of the National Association of Master Plumbers and all other parties concerned for the year, from August 28, 1908 to September 9, 1909.

"The Secretary's work has been considerable, and ably done, and, judging from the majority of answers he received, we could not justly have blamed him for being discouraged. We are pleased, on the contrary, to state that he had stuck to his post manfully, and kept up his good work of organization. He deserves the congratulations of the members."

J. E. WALSH, Chairman.

Report of Sanitary Committee.

"We cannot boast of anything we have done since you elected us to this important office, but in looking back over the past twelve months, we see many reasons for suggesting that we try in some way to remove or improve the existing troubles that we are up against—and would suggest that we form ourselves into a body to be known as the Canadian Sanitary Association with locals in all the towns of importance throughout Canada.

"It is a well known fact that anything that our association would do for the advancement of sanitary science is looked upon with suspicion and opposed by the general public, but if a body by the name of the Canadian Sanitary Association was to forward anything of the same nature it would meet with their approval, therefore we hope that you will give this matter your serious consideration."

PETER C. OGILVIE, Chairman.

Report of Apprenticeship Committee.

"The committee is of the opinion that your convention should take the question up and once for all adopt uniform regulations as to the time limit and yearly rate of apprentices.

"In Montreal, we have a trade school for apprentices numbering last year, 105 pupils. The school has been carried on successfully but we regret to state that although financially supported to some extent by the local association of master plumbers, it is not fully controlled by it. The pupils at present are made up in part by foreigners whose only ambition is to become sidewalk plumbers. We should like to see this school, as well as the new school to be opened in Three Rivers, controlled by local master plumbers' associations."

J. GRIFFIN, Chairman.

THURSDAY MORNING.

On Thursday morning the session was called to order at 10.30 o'clock, the first business being the appointment of G. H. Cooper, F. Dexter and W. David as a nominating committee.

Frank Powers then read the conclusions of the Resolutions Committee on the various reports presented, as follows:

Report of Resolution Committee.

1st.—We would recommend the adoption of the secretary's report and call special attention to the secretary's complaint regarding the prompt answering of correspondence. Some action should be taken by this convention in this matter.

2nd.—We recommend the adoption of the able report made by the Vice-President for Nova Scotia and congratulate Vice-President Dexter on his good work in that province. In matter of incorporation your committee suggest that the National Association of Master Plumbers and Steamfitters be incorporated under a general act by the Dominion Parliament, said act to cover all provincial associations.

R. J. SHANNON, TORONTO,
Elected Vice-President for Ontario.

3rd.—We recommend the adoption of

the report made by the Vice-President for Ontario and call special attention to the particulars in this report which are on the same lines as Vice-President Dexter's report.

4th.—We call special attention to the

WALTER RYAN, MONTREAL,
One of the Irish Delegates.

report of the Vice-President for New Brunswick, and advise this body to take some action in this matter, and refer to our recommendation in clause 2 of this report. Your committee also strongly condemn the action taken by the supply house referred to.

5th.—Your committee advise the consideration and adoption of Vice-President Laurier's report and call attention to the fact that all the reports appear to be along the same line. For this reason your committee are of the opinion that all the reports should receive careful consideration.

6th.—Your committee advise the adoption of the President's report and call attention to the fact that several of the reports recommend efficient legislation, and we therefore urge careful consideration of this matter.

7th.—Your committee advise dealing with the report of the apprenticeship committee in open meeting.

8th.—As the report of the sanitary committee agrees with the other reports presented we advise dealing with this in the same manner.

FRANK POWERS,
JOSEPH LAURIER,
GEORGE H. COOPER.
Committee.

It was decided to discuss the report clause by clause.

J. A. Gordon said that in regard to clause 1, he could fully realize the position in which Secretary Munday was placed. He, himself, was secretary for several years, and could never get many answers to letters. It was very discouraging.

Secretary Munday said that the delay in answering correspondence kept his work back. If the members would only report immediately something could be done, and he would know that they were in touch with him. As a rule he could only tell that they had received his letters by the fact that these letters were not returned by the Dead Letter Office. Something should be done to improve this state of affairs as it was very disheartening.

Harry Mahoney said that he would like The Plumber and Steamfitter to take this matter up. If it would urge upon master plumbers the absolute necessity of answering letters, much good would be done. The members would pay attention to what appeared in their trade paper. The secretary could also put a little memo in the letter that all correspondence should be answered promptly.

On the motion of John Watson, seconded by H. Mahoney, it was decided to adopt the clause, and that the trade papers be asked to request plumbers to answer association letters promptly.

Incorporate Under New Name.

In connection with clause 2 the most important debate of the whole convention originated. Mr. Powers moved that legislation be secured incorporating the association as a dominion organization, and that the name of the association be changed to that of the "Canadian Society of Heating and Sanitary Engineers," a committee being appointed to secure a charter from the Dominion government for the new society. It was evident at once that the meeting was impressed with the idea submitted, and Mr. Powers won the support of the delegates in contending that the time had come when master plumbers should be known, not as plumbers—whom dictionaries define as workers in lead—but as engineers in every sense of the word. It was generally agreed that although the architect got the credit it was the master plumber who laid out the intricate plumbing and heating systems in modern buildings, and credit should be given where credit was due. It was also acknowledged that the public were prejudiced against master plumbers, blaming the reputable men for the faults of the minority, and that the new name would not only give the master plumbers a better chance of wearing down this prejudice but would enable a distinction to be made between the skilled and unskilled men. At present they were all classed under the name of master plumbers.

Some discussion arose as to whether the master plumbers association should be merged into the proposed new organization or whether a new society be formed independently of the older association and the latter allowed to die quietly, but there was no doubt as to the approval by the meeting of the general idea.

Mr. Powers said that master plumbers were technical men and the public should acknowledge them as such. The standard of plumbing would be raised and a new start given to one of the most important, yet most maligned crafts in Canada. They should invoke Federal legislation to incorporate them as the Canadian Society of Heating and Sanitary Engineers, and form a new set of by-laws. In time they could get legislation to compel every man to be competent. Thus would they be known for what they really were. The unskilled man could be sifted from the skilled man. The scientific plumber of to-day would get the credit that should be coming to him, and the public would put him on the plane to which he was justly entitled, and give him the respect that other engineering bodies were now accorded. Master plumbers must seize hold of this matter boldly and delay no longer, for it was most vital to their status in the country. As a society of engineers they would be better able to induce those reforms for which they were earnestly trying and which the health of the country urgently needed.

J. E. Farrell, in supporting Mr.

J. GRIFFIN, MONTREAL,
Chairman Apprenticeship Committee.

Powers, said that he did not know of any trade requiring more skill than that of plumbing and steamfitting. Legislation along the lines proposed would give a better standing to the trade, and that was what they wanted, and what they

deserved. A change of name would enable every member of the body to hang up a certificate, granted by the society, in the shop, and thus give the master plumber a chance of showing himself in his true light to the public, and gaining the trust and respect that, as a highly scientific and skilled man, he deserved.

P. C. Ogilvie said that while agreeing with the desirability of doing something to give plumbers their proper standing in society, he did not believe that they should merge the name of Master Plumbers' Association into that of the Society of Heating and Sanitary Engineers. The people were already suspicious of the master plumber, and changing the name of the association would make them more so. They would think that a deep and nefarious scheme was on hand. Let them retain the name of the Master Plumbers' Association, but form amongst themselves an independent association. Then in time they could let the older association go quietly out of business.

G. H. Cooper said he did not believe in two associations and supported Mr. Powers idea of the new society. Mr. Ogilvie's suggestion would be like having two doors to the one room and it would encourage suspicion of wrong doing. Be frank and above board in making the change and the public will respect us.

Harry Mahoney believed in the recommendations of the Resolution Committee.

They could not from financial reasons carry on two associations and certainly the new name would give plumbers more prestige and enable them to go to the Government and get better sanitary legislation which they could not as Master Plumbers. He believed that the trade in Ontario would prefer the title of "sanitary engineers" to "master plumbers," and the change would have the effect of making it easier to reorganize in that Province.

The original motion as proposed by Mr. Powers was then adopted with slight amendments and the incoming president, secretary and one other member were empowered to secure legislation incorporating the association as a Dominion organization with provincial branches, the association's name to be the "Canadian Society of Heating and Sanitary Engineers."

The other clauses were adopted after slight discussion.

THURSDAY AFTERNOON.

In the afternoon Treasurer Mahoney reported that the receipts were $484.52 and the disbursements $221.85, leaving a balance in hand of $262.67.

The auditors reported that statement correct and on the motion of Frank Powers, seconded by J. Laurier, the report was carried with vote of thanks to the treasurer for his loyal services. An honorarium of $100 was also voted to Secretary Munday for his work during the year.

Selling Outside the Trade.

A definite complaint was received giving particulars regarding the sale of boilers and radiation to a private individual at Halifax. After discussion the matter was referred to a committee for investigation.

Election of Officers.

The nominating committee, composed of F. Dexter, W. David and G. H. Cooper then submitted the following recommendation for officers for the coming year, and after being taken up one by one, the nominations were approved of without opposition :

President—Joseph Laurier, Montreal.
Vice-President—Geo. H. Cooper, Toronto.
Treasurer—Harry Mahoney, Guelph.
Secretary—Harry Munday, Montreal.
Provincial Vice-Presidents :—
Ontario—R. J. Shannon, Toronto.
Quebec—J. E. Walsh, Montreal.
Nova Scotia—F. Powers, Lunenburg.
New Brunswick—Wm. Watson, Moncton.
Manitoba—R. L. Beattie, Winnipeg.
Alberta and Saskatchewan—E. J. Young, Calgary.
British Columbia—John Colbert, Victoria.
Chairmen of Committees :—
Sanitary—P. C. Ogilvie, Montreal.
Legislation—H. A. Knox, Ottawa.
Appreticeship—J. Griffin, Montreal.
Essay—E. Russell, London.

Ballots were cast for each officer nominated and the elections made unanimous.

President elect Laurier said it was more difficult for him as a French-Canadian than for the others to occupy the position of president, but he would do his best. With the help of the capable officers around him he hoped to do as well as his predecessors. If he did not, it would not be for the want of trying or for lack of enthusiasm.

Resolution of Thanks.

The next business was the consideration of the following motion introduced by Frank Powers :

> We desire to express our appreciation for the entertainment provided by the manufacturers and plumbing supply men at our conventions at Montreal, but we look forward to the time when our finances will make it possible for us to be the hosts rather than the guests.
>
> We also wish to express our thanks to our Canadian trade paper, The Plumber and Steamfitter, as we consider that this paper is deserving of the support of all branches of the trade for its assistance in our efforts to reorganize the association, as well as for the articles it publishes from time to time intended to educate the new men in the trade in better business methods, this being helpful alike to the supply men and the master plumbers.
>
> The thanks of the association are also due to the "Plumbers Trade Journal," New York, who have again sent a representative to our convention.

PLAYING THE RACES AT BLUE BONNETS TRACK.

They were playing in hard luck and commencing to wonder if they'd have to walk home.

Secretary Munday seconded the motion and complimented The Plumber and Steamfitter for the support it had rendered the association. Reaching nearly every master plumber in every part of Canada, its persistent efforts to reorganize the trade were deserving of support. He regretted to see, however, so few supply houses assisting the paper by advertising in it. Every firm selling goods to master plumbers in Canada should use the paper.

George H. Cooper also spoke in approval of the work The Plumber and Steamfitter is doing, and Harry Mahoney asked if the Plumbers' Trade Journal could not give more space to Canadian news.

After the motion was adopted Frank Powers urged that the association insert an advertisement in The Plumber and Steamfitter, giving a list of the officers of the association. Mr. Wrigley said he would place a column or a page at the disposal of the association and would publish the list of officers without cost. He suggested that the secretary write a short official letter each month and the other officers also take their turns in supplying matter for publication in this official department.

Mr. Powers said he had always been an advocate of the association paying for everything it received, but he favored the acceptance of the liberal offer made and would help to supply matter for the official column in The Plumber and Steamfitter.'

A vote of thanks was then passed the Montreal Association for use of the local rooms, and J. Laurier said that the Montreal Association was only too pleased to place their rooms at the disposal of the National Association.

A GROUP OF SUPPLY MEN AT THE CONVENTION.

Top row: Tom Carlind, W. R. Rodden, G. D. Clewes, A. L. Macdonald, Jack Carlind and Joe Morris. Bottom row: F. H. O'Connor, James S. Taylor, J. O. Bernier, E. P. Matte and H. P. Bonham.

Weston Wrigley, editor of The Plumber and Steamfitter, by courtesy of the meeting, was given the floor, and thanked the members of the association for their continued confidence. The paper could hardly receive greater support from the master plumbers in the way of subscriptions, as practically every firm of consequence in Canada was on the subscription list. In his opinion, however, some of the plumbing supply houses and manufacturers did not appreciate the work the paper was doing for the trade. The reorganization of the trade will mean better work and better prices with less losses from bad debts, and consequently the educational work the paper is doing is as much in the interests of those who sell plumbing goods as those who use them.

Referring to Mr. Powers' suggestion, At any time the local men would be happy to help them.

Next Convention in Toronto.

With regard to the next convention meeting, it was first suggested that the matter be left to the incoming executive, but Mr. Powers thought that selecting the place then would strengthen the local association concerned, and make the members rise to the occasion. He moved therefore that Toronto be selected as the next meeting place of the convention. The master plumbers there wanted rousing up, and the coming of the convention would induce more enthusiasm and create energy. The National Association did not want any money spent for entertainment. They simply wanted the Toronto members to furnish a hall and attend the convention.

It was thereupon agreed that the 15th annual convention be held in Toronto, during the first week of Toronto exhibition, the exact date to be arranged by the incoming executive.

Mr. Powers moved a vote of thanks to the retiring officers, and thought that one and all had done their work most efficiently and to the best interest of the association.

Mr. Farrell seconded, and referred to the desirability of increasing the interest of members in the conventions, and he referred to the action of contractors taking general contracts as a subject that could well be gone into.

P. C. Ogilvie said that the only way was for plumbers to refuse to take subcontracts. They should deal with the proprietor himself. The master plumber should make a stand and say, when tenders are being peddled, "I am not going to give any price except to the proprietor." This would stop the contractor from going about cutting on each other plumber's price.

The vote of thanks was carried and President Laurier was escorted to the chair and installed as president.

Conference With Supply Men.

The door was then thrown open to a large delegation of supply men and for half an hour an interesting discussion was continued as to how best to continue the good relations existing between the master plumber and the supplyman. Some frank criticism was made of supply houses which are in the habit of selling to men outside the trade, the supply men, on the other hand, pointing out that master plumbers are frequently responsible for this themselves. J. B. Morris, Montreal manager of the Dominion Radiator Co., made a very practical talk, and secured general approval to a suggestion he made that terms be shortened in Quebec Province to "two per cent. thirty days." This, he contended, would help master plumbers who are doing a legitimate business and enable the supply houses to discriminate in a perfectly legal way against the "fly-by-night" plumbers who have no financial standing and who, after taking a few jobs at cut prices, jump to another city leaving supply house bills unpaid.

Following this discussion the 1909 convention adjourned.

The Montreal office of The Plumber and Steamfitter was very convenient, being on the seventh floor of the Eastern Townships Bank building, the convention being held on the tenth. The delegates were invited to use the offices and dictate correspondence, the invitation being accepted by several of the active workers on the different committees.

VISIT TO ROLLING MILLS.

On Friday morning G. D. Clewes, the missionary for M. R. M. black and galvanized pipe and fittings, piloted a party of master plumbers out to the Montreal Rolling Mills pipe works, and here the entire process of manufacture was explained by Mr. Ross McMaster, and other members of the staff of the company.

Large piles of sklep were seen in the yards beside the canal and railway, and huge traveling cranes were seen transporting the skelp to the gas furnace, where it enters in flat sheets, and on leaving is drawn through a bell and formed into pipe of the butt weld type. Pipe of 1¼ inch size was being drawn in 20-foot lengths, and the night before, Sept. 16, a record run of 3,991 lengths of this size had been made.

SOME OF THE MONTREAL ROLLING MILLS STAFF.

G. D. Clewes, A. J. Wood, J. C. Jones, Ross McMaster (Assistant General Manager), H. T. Diplock, A. H. Hough and Wm. Moseley.

Leaving the gas furnace the red hot lengths of freshly formed pipe are drawn onto a platform by boys and then passed on by chain rollers to a sizing roller, and passing through this is made of uniform size for threading. From this it is carried by chain rollers across a table where an automatic counter registers the number, and on to the threading department, where it is dropped into piles. Then a crane carries bundles to tables where the rough ends are removed, the pipe threaded and couplings put on. The next process is the testing of the pipe under a water pressure of 600 pounds, far greater than will be required in actual use. The galvanizing is done in vats at the main works of the company, but a new galvanizing plant is to be erected at the pipe works during the coming year.

A section of the pipe drawing building is given over to the manufacture of couplings, short lengths of iron being bent into form and then forged and hammered, afterwards going to the machine department to be finished and threaded.

Following the visit to the pipe mills the party visited the branch offices of the company, where refreshments were served and addresses delivered by Joseph Laurier and Frank Powers, on behalf of the master plumbers, and Ross McMaster, on behalf of the company, the former expressing their gratification at being able to see the process of pipe making, while the latter thanked the visitors for their attendance and expressed the desire of his company to do all it could to aid the master plumbers in raising the standard of work done, and in putting the plumbing and heating business on a profitable basis.

THE CONVENTION COMMITTEES.

The reception committee of supply men and master plumbers was as follows:—C. C. Macdonald, chairman; A. W. Lamontagne, J. Carron, J. Laurier, J. A. Gordon, W. David.

The entertainment committee consisted of R. J. Lockhart, chairman; W. Rodden, A. L. Macdonald, F. Rawley, H. A. Lamontagne, J. O. Bernier, D. Dugas and P. C. Olgivie.

THE ENTERTAINMENT FEATURE.

The Montreal supply men will maintained their reputation for openhanded hospitality, the members of the reception committee making themselves busy in seeing that the delegates were made at home, and became acquainted with each other. Then the entertainment committee got busy and did their part so well, that time was not allowed to drag during the off hours of the convention.

C. C. MACDONALD, MONTREAL,
Chairman Reception Committee.

The unsettled state of the weather made some changes in the program necessary, but everything ran smoothly, and all had a good time.

On Wednesday night delegates and supply men took special cars to Dominion Park, and until midnight the park was a centre of jollification, the members of the party forgetting business worries and convention affairs, while they dipped the dips on the scenic railway, bumped the bumps on the inclined slope, shot the shutes into the water pond, rode on the camels and finally wound up in that reminder of childhood days, the merry-go-round. Chairman Lockhart, of the entertainment committee, made a

R. J. LOCKHART, MONTREAL,
Chairman Entertainment Committee.

splendid "Foxy Grandpa," and assisted by the other members of the committee saw that each visitor had such a good time that they would soon come "Back to Montreal."

On Thursday evening tickets were distributed for Ward & Vokes' show at the Theatre Francais, the front seats being given to those whose hair is growing thin. The vaudeville stunts of the company were thoroughly enjoyed, particularly Lucy Daly's "Betsy Bolivar" song. After the theatre about 50 adjourned to the "Oxford Cafe," where the entertainment committee provided supper, followed by an impromptu program of music and song, in which the Macdonald boys, A. L. and C. C., took the leading part.

Several of the ladies present could only speak their native French tongue, and it was amusing to see Harry Mahoney and George Cooper trying to carry on a conversation with them. Harry Mahoney finally made a compact with Mrs. Joe Laurier that by the time of the convention at Toronto next August, she is to be able to speak English and he is to be proficient in French.

On Friday afternoon a party of supply men and master plumbers attended the races at Blue Bonnets track, and on Saturday afternoon another party took in the lacrosse match between the Shamrocks and Montreals.

THE SUPPLY MEN PRESENT.

Some of the supply men seen by The Plumber and Steamfitter during the convention, were :—

Warden King Co.: W. R. Rodden, A. W. Lamontagne and W. J. Sharpe.

Gurney-Massey Co. : R. J. Lockhart and E. F. Mondehard.

Taylor Forbes Co.: James S. Taylor, John M. Taylor, junior, and E. Dansereau.

Dominion Radiator Co.: J. B. Morris, F. Rawley and E. P. Matte.

King Radiator Co.: R. J. Cluff and J. C. Wilson.

Toledo and Jardine Tool: C. C. Macdonald.

Pittsburg Valve & Fitting Co.: Thomas Carlind.

Lunkenheimer Co.: John Carlind.

Standard Ideal Co.: A. L. Macdonald.

Amherst Foundry Co.: Wm. Knight.

Thomas Robertson Co.: S. R. Brewer and Harry Lamontagne.

James Robertson Co.: J. O. Bernier, W. Maguire, H. Bonham and J. E. L. Leclaire.

Montreal Rolling Mills: G. D. Clewes.

Canadian Brass Co.: J. R. Martin.

CONVENTION NOTES.

Frank Dexter brought his wife along last year and again this year. It's a good example for others to follow.

T. J. CARLIND, MONTREAL,

Now representing the Pittsburg Valve & Fitting Company.

Four provinces were represented, Nova Scotia, New Brunswick, Quebec and Ontario.

R. J. Shannon has built up a nice business in Toronto from a small beginning and says he is going to make the effort of his life to organize a "Sanitary and Heating Engineers' Society," in Ontario during the coming year.

J. B. MORRIS, MONTREAL,

A man who speaks bluntly but holds his popularity.

John A Gordon, with Mrs. Gordon and Miss Gordon, just returned from a trip to Europe on Friday before the convention.

J. Atchison, who has been in the plumbing trade at Montreal for over half a century, was a visitor at the convention.

Frank Dexter deserved all the good things said about him. He has done good work for the trade in Nova Scotia during the past two years.

J. M. Elliott, Kingston, who attended the convention the second day, is a member of the firm of Elliott Bros, his brother having been a member of the Kingston Council, as alderman and mayor for the past seventeen years.

J. B. Morris, Montreal manager of the Dominion Radiator Co., never misses a chance to increase his popularity with the boys, and yet he can always be relied upon to speak plain, when necessary. Joe had a number of the boys out for a drive on Friday evening.

Tom Carlind participated in a reunion of the champion Montreal lacrosse team of 1885, held on Saturday following the convention.

"Bob" Cluff was a visitor in Montreal on Friday, his company being represented during the convention by Jack Wilson, who is now covering Toronto for the King Radiator Co.

Jimmy Taylor did his best to make up for the absence of his brothers, John M. and Adam.

F. Rawley was kept away from the Dominion Park outing by an important business engagement—the arrival of a girl baby at his house.

Wm. Knight, of the Amherst Foundry Co., was called home on the first day of the convention.

J. R. Martin had a large number of the delegates visit his rooms in the Board of Trade Building, and inspect his samples of brass goods from the Canadian Brass Mfg. Co.'s works at Galt, Ont.

"Billy" Mansell, Toronto, is enthusiastic about the results achieved at the Montreal convention and says the trade in Toronto must rise to the occasion and get a good organization in shape to do credit to Toronto when the national convention meets here next August.

Congratulations were showered upon John Watson on the occasion of the marriage on the second day of the convention of his oldest daughter, Florence R. to Herbert Parsons, a civil engineer on the New York Central. Miss Watson was married at the family residence by the Rev. I. K. Unsworth. On their honeymoon the couple visited Toronto and afterwards went to the Maritime Provinces, Mr. and Mrs. Parsons will reside in Albany, N.Y. Among the presents received, were a set of silverware from the employees of Mr. Watson, and a cabinet of cutlery from the master

plumbers and friends assembled at the convention.

If anyone wants anything in Montreal and has difficulty in getting it, just ask Tom Carlind. Three of the boys wanted to return to Toronto on Friday night, and after trying for three days to get berths they told Tom their troubles and it wasn't long before they were all fixed up with lower berths. On the Grand Trunk alone nineteen Pullmans were required on Friday night, the crowd being extra large owing to the race track devotees moving from Blue Bonnets track to the Woodbine at Toronto.

J. M. ELLIOTT, Kingston.

G. D. CLEWES, Toronto.

FRANK POWERS, Lunenberg, N.S.

There was a big bunch of Irishmen at the convention. Frank Powers, who was National President several years ago, turned up again and was the life of the gathering. Then J. E. Farrell, Harry Mahoney, J. E. Walsh, "Bob" Shannon, Wm. Ryan, J. Griffin, George Cooper and Harry Munday, all claimed the "Emerald Isle" as their ancestral home.

J. C. Wilson, who represented the King Radiator Co., Toronto, at the Montreal Convention, is a young man who has had a wide connection with the heating trade, while his father, J. H. Wilson, formerly with the John Ritchie Plumbing Co., Toronto, was equally well-known amongst master plumbers. "Jack" started with the Dominion Radiator Co., after finishing his education, and when the firm of Cluff Bros. was established four or five years ago he became their first traveler, calling on the trade in Toronto. Later he covered Eastern Ontario and afterwards Western Ontario for the same firm, but for some months has again been representing the King Radiator Co. as Toronto city salesman. "Jack" has made good and ought to have a bright future in the trade.

CHATHAM PLUMBERS FAVOR INSPECTION.

There is quite a bit of talk again of municipal plumbing inspection at Chatham, Ont. The subject was urged at the beginning of the year by Mayor Westman. The proceedings of the waterworks board, where complaints regarding excessive water bills have been bolstered up by stories of leaky plumbing, are quoted as indicating the need for a new plumbing by-laws somewhat on the lines of that recently intrdouced in Vancouver. At present plumbing licenses are granted by the waterworks board without any examination as to the applicant's familiarity with either the theory or practice of the trade, and, though the board retains the right to revoke these licenses upon evidence of faulty work or violations of the water board's rules, the penalty has never been enforced. Leading plumbers are in favor of a system of inspection. "As it is now," remarked one recently, "any Tom, Dick or Harry can get a license, whether he knows anything about plumbing or not. The business is being overrun, and poor work is bound to follow. With competition of this sort, the only way for untrained plumbers to get business is by cutting prices, and they can't cut prices without cutting also on the quality of the work. A poor job means constant repairs, and, while that might seem a good thing from the plumber's point of view, nevertheless the average plumber prefers to do a lasting job for a fair wage. Price cutting by the plumber means poor work for the customer—and a decent system of inspection would prevent either."

CHANGE IN INSPECTORSHIP.

Henry B. Davis, the chief inspector of plumbing of the district of Columbia, has taken a four months' leave of absence to enter a firm of builders, and at the end of the furlough, he will formally resign. Mr. Davis was the founder of the American Society of Inspectors of Plumbing and Sanitary Engineers, which was organized in Washington, in January, 1906, and of which he was president for two years. Alfred R. McGonegal, draftsman in the office under Mr. Davis, has been appointed as Inspector of Plumbing at the salary of $2,000 per annum.

J. C. WILSON, TORONTO.

City Salesman for the King Radiator Co.

J. O. BERNIER, MONTREAL.

Traveling Representative of the James Robertson Co.

TALES OF THE TRADE

FARRELL MISSED THE TRAIN.

J. E. Farrell, North Bay, did not arrive at the Montreal convention until Wednesday night, although the meeting opened Wednesday morning. The story of how he came to be a day late was not told the other delegates, however.

J. E. FARRELL, North Bay.

He had been looking after a heating job in a C.P.R. town between North Bay and Port Arthur, and the only train out that night left at two o'clock. Mr. Farrell had impressed upon the night porter of the hotel the importance of calling him in time for this train. And promptly at 1.30 a prodigious knock roused the sleeper.

"Say ! be yez the man what wants the two-o'clock thrain ?"

"Yes," was the sleepy reply from within.

"Well, yez can shlape an hour longer, fer she's so much late."

The heavy feet shuffled off down the hall, and silence ensued. Another hour had passed, when Pat again knocked.

"Say ! Be yez the felly what said he wanted to ketch the two-o'clock thrain ?"

"Yes !" and there was a sound of the man hastily springing from his bed.

"Well," drawled Pat, "yez can go back to bed again, fer she's another hour late."

A forcible remark or two proceeded from the plumber's room, and were audible to his awakened neighbors, as was the departure of Pat ; but soon all was quiet again, and the few occupants of the hotel were left for some time to undisturbed repose. Just as the first faint streaks of dawn were tinging the sky Pat once more made his presence known, and, in tones giving unmistakable evidence of recent and heavy slumber, remarked :

"Say ! if ye was the felly what wanted to ketch the two-o'clock thrain yez can shlape till mornin', fer, bedad, the blame thing's gone !"

HE PLAYED THE RACES.

A certain salesman who sells brass goods put in a hard week's work, and came to Toronto last Friday feeling that he had earned a day off. And liking the smell of horseflesh he wended his way to the Woodbine on Saturday afternoon determined to have some fun and turn a few "tips" into ready cash. Not all his "inside information" proved reliable, however, and rumor says that he had to make a raise for expense money to get out on Monday morning. But "Charley" is a good philosopher and says if a fellow will have fun he must pay for it.

FRED'S GREATEST SURPRISE.

"Fred J. Lucas, secretary-treasurer of Purdy-Mansell, Limited, Toronto, was agreeably surprised on Sunday, September 12, when a tiny visitor arrived too late for the exhibition. It's a girl and mother and child are both doing well."

The above announcement brings to mind one of the biggest surprises of Fred's life. About a year ago he got a fortnight's holiday and went up to Lucknow to get married. Alec Purdy got wind, however, that Fred intended to take a quiet holiday in his new home on Dovercourt road instead of going on a honeymoon trip. So Alec got into the house and had a big supper prepared and when Fred brought his bride home one evening and let himself in with his latch key, he was more than surprised to have the house become ablaze with light before he could reach the electric switch. Showers of rice were followed by a general handshaking, after which supper was served and Fred made his maiden speech.

And now its a maiden girl.

A SPORTY SALESMAN.

S. H. Hadley, traveling salesman for the James Morrison Brass Works, Toronto, came in last Saturday with a story concerning a certain London master plumber, noted for his sporting proclivities, and how another salesman because of this got an order for a fine bill of goods.

The salesman after talking up his goods to the point of interesting the master plumber to look at his samples and considering prices, was met with the argument that the master plumber could "do three dollars better with another house."

Knowing the man and his weakness the traveler came back with the retort : "Bet you five dollars you're afraid to give me the order." This was too much for Mr. Master Plumber. "Take you," said he.

The salesman retired shortly after with the order, and the plumber remained in deep thought for a few minutes. Then he soliloquized : "Smart fellow, but I'm in two dollars anyway."

D. A. Ross, of Winnipeg, has taken an interest in the Western Plumbing & Heating Co., Saskatoon. Until recently Mr. Ross represented the Dominion Radiator Co. in Manitoba and Saskatchewan. The firm now consists of Smith, McAdam & Ross.

INTERIOR OF OFFICE OF THE PURDY-MANSELL CO., TORONTO.

From left to right : Alex Purdy, L. R. Fox, Fred Lucas, Percy Mansell and H. Lemon.

Electrolysis of Water Mains at Winnipeg

Report Made by Prof. Herdt to Winnipeg City Council Showing How the Water Mains in that City Have been Corroded and Ruined by Stray Electric Currents From the Street Railway System.

Pursuant to the resolution of the Council of the City of Winnipeg, which appointed me under date of January 5, 1909, to report upon the electrical conditions in the City of Winnipeg, particularly in connection with return current of the Winnipeg Electric Railway Company's system and their connection with the Government Telephone Cable System, to report upon the electrical conditions existing in the City of fire standpoint and to submit recommendations dealing with improvements of the present system so that any electrolysis or fire risk, if such exists, may be eliminated, I have the honor to present herewith the following report:

The Winnipeg Electric Railway Company, in operating their street railway system, use the rails as a return for the current operating the cars. In order to make the rails a continuous conductor and thus secure a good return path for the current, the rails are bonded at the rail joints with copper bonds, besides this the rails are connected to the station negative bus bars by return copper feeders, bonded to the track at different points of the system.

This is the usual method of street railway return construction, but electric railway companies using this system, that is, using the rails as the return circuit for the returning currents, are a serious menace to piping and cable systems in proximity to the tracks, if the methods of constructing the above described rail returns are such that the railway companies are unable to control their own currents, but use the piping and lead-covered cables as part of their return circuit.

Cause of Electrolysis.

Currents from the railway system, if the track returns are in bad condition, having to find their way back to the power house, will flow from the rails which are in contact with the ground, through the ground and such metallic constructions in it as offer the least resistance to the flow, and after flowing through these (gas pipes, water mains, lead-covered cables, etc.) towards the station, will return through the ground, back to the rails to return conductors in the vicinity of the power house. These stray currents cause electrolytic action, that is, wherever current passes from a pipe or cable to ground, or to another pipe or cable, corrosion of the metal is set up; holes and pittings are produced, causing bursting and leaking of pipes, eating away of the lead-covering on telephone and other cables, rendering them useless. This corrosion may be very rapid and depends on the intensity of the stray currents passing through.

If the rails in a track system were continuous and the current density in the rails kept low, with rails well connected to the power house, the rails would offer such a good return path for the current that street piping, cables and

Electrolysis of City Water Mains.

other metallic structures would be practically immune from electrolytic damage due to stray currents. However, as the rails are not continuous but made up in lengths, they must be jointed by copper bonds possessing such mechanical and electrical properties as will secure permanent and efficient electrical continuity of the rails between sections. If such bonding does not exist, and if return feeders connecting the rails to the power house are inadequate for the purpose, the amount of leakage current must be great and electrolysis is bound to exist. The immunity of street piping and other metallic structure from electroyltic damage due to stray currents demands that electric railway companies adopt such method of construction for their track returns as will minimize the danger and the railway companies must maintain the efficiency of such construction through systematic inspection and repair.

In view of the above and in order to arrive at correct and definite conclusions regarding the conditions existing in the City of Winnipeg, a survey for electrolysis and examination of the track piping and cable systems was made.

Plans Prepared.

Drawings were made as follows:—

Plan No. 1 showing electric railway tracks, high pressure water mains, domestic mains, gas mains, telephone cables —City of Winnipeg. Only those close to or paralleling railway tracks are shown.

This plan also shows districts affected by electrolysis.

Plan No. 2 shows also present lay out of feeders and sections—electric railway tracks, weight of rails, return feeders, bonds, etc.

Plan No. 3 showing localities where damage to water pipes by electrolysis has taken place (from reports of F. A. Cambridge, Esq., city electrician).

Description of System.

The Winnipeg Street Railway Company have two plants in the City of Winnipeg—one, the old steam plant at the foot of Main Street, corner of Assiniboine Avenue; the other, the sub-station on Mill Street. The first plant is kept as a steam reserve; the second plant, which furnishes the whole of the electric current for the street railway system, receives its electrical energy from the hydro-electric plant at the Pinawa Channel of the Winnipeg River. The average current for the railway service fed out from this plant approximates 6,000 amperes, but reaches as high as 9,000 amperes at times of heavy load in the winter months.

The street railway tracks are bonded at the corner of Main Street and Portage Avenue to return feeders connected to the negative bus bars at the station. Other return feeders connected at different points to the track are also used (see Drawing No. 2)

It was apprehended at once from a study of the geographical location of the power station, its distance from the street railway tracks, the large volume of current that required to be returned to

it, the run of the underground piping system and the telephone cables (see Drawing No. 1) and the proximity of the river, that unless the track returns were of the very best, and unless there was a very generous amount of copper used for the negative feeders, the conditions were such as to point to great possibilities for stray currents.

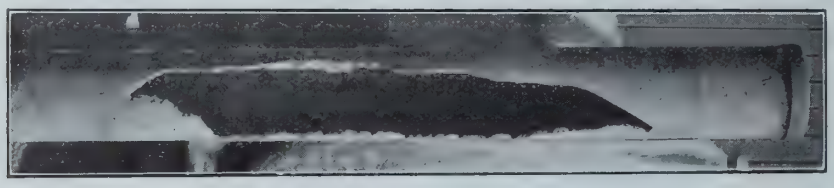
Electrolysis Investigation.

The electrolysis survey which was carried out, involved not only mere readings of potential difference between the rails, the piping system and telephone cables, but it embraced an examination of the feeding circuits, the general condition of the roadbed and the size and efficiency of the return. A complete and thorough examination of the points where the city electrician had reported damage to the pipes was also made.

The following summary states concisely the conditions existing in the city.

District Affected by Stray Currents.

The report of your city electrician, a copy of which is attached (Exhibit D), giving location of pipes damaged dating



Electrolysis of City Water Mains.

from January 1905 to June 4, 1909, shows that electrolytic action has mainly taken place in the following districts.—

1st—Princess Street, from Logan Avenue to Notre Dame Avenue.

2nd—Portage Avenue, from Hargrave Street to Forth Street.

3rd—District enclosed by Main, Broadway, Hargrave and the river.

4th—Notre Dame Avenue, from Main Street to Winnipeg Electric Railway Company's sub-station.

5th—Ellen Street, from Notre Dame Avenue to McDermot Avenue.

6th—Langside Street, from Portage Avenue to Ellice Avenue.

(These districts are shown shaded on Drawing No. 1.)

Pieces of water pipe and lead covered cables taken from these districts by Mr. Cambridge were examined and showed without doubt that holes and breaks in them had been caused by electrolytic action. (Photos of these attached.)

The damage reported in districts Nos. 1, 2, 5, and 6 is caused by the very bad condition of the bonding on Portage, Notre Dame and William Avenue and Sherbrooke Street tracks. On Portage Avenue, from Hargrave Street towards Sherbrooke, where the roadbed is unpaved, the bond wires, which are Nos. O, B, and S, soft copper wire with bonding cap terminal, give readings in equivalent feet of rail of 20 to 60 feet—this shows very bad condition of bonding. (Readings are given in Exhibit A.)

At several places the bonds are uncovered and many broken bonds were noticed. Current is leaving the tracks in Sherbrooke Street, South Portage and Notre Dame west of Sherbrooke (rails are positive to pipes), entering the pipes, flowing down these until close to Main Street is reached (along Main Street from river to C.P.R. subway, pipes are positive to rails), the current leaves the pipes to rails, telephone cables or other pipes causing the damage reported—it accounts also for the trouble reported in the T. Eaton Company's store. (Report of city engineer, March 2, 1909.

In connection with district No. 3, that is, in the district around the car barns on Main Street close to the river, the rails on Main Street are bonded to the water pipes. The heavy water mains on this street carry a large part of the railway current till it reaches Water Street, Notre Dame Avenue and Portage Avenue East, that is, district No. 4, the stray currents are here given back to the telephone cables which are bonded to the negative bus bars of the sub-station on Mill Street and also to the intricate network of mains and service pipes lying in this district. This accounts for the trouble reported in the McIntyre Block. In this connection, the writer desires to state that on May 26 in company with the city electrician this building was visited. In the basement a recording amperemeter was connected between the water main and the telephone cable. Charts of current readings were kept. At the time of the visit 50 amperes were recorded and the water pipe was positive to the telephone cables. With the statement reported by your city electrician that such a condition involves danger of fire, the writer does not agree, although the conditions there are remarkable enough that conditions might be assumed under which fire could be possible. The remedial scheme referred to above, that of bonding the tracks with water and gas pipes, although it may afford local protection and was considered good practice some time ago, will greatly increase the amount of stray currents and should not be encouraged.

The bonding of the tracks on Main Street from the river to the C. P. R. subway is good. (Readings are given in exhibit "E"). In addition to the rails which are heavy (70 and 95 lbs. to the yard), a 500,000 c. m. cable runs between the rails and is cross bonded to the track. On account of the bad condition of the track returns in the other parts of the city causing stray currents everywhere, the tracts on Main Street, connected to the bus bars through heavy copper returns, draw the currents from the piping along this street. This is shown by the electrolysis survey, as readings taken along this street between the high pressure hydrants and domestic water pipes show these positive to the rails. As a matter of fact throughout the whole centre of the city this condition is met (see drawing No. 3).

It can therefore be stated that electrolysis is taking place through the entire centre of the city.

Return Feeders.

The tracks are bonded at the corner of Main Street and Portage Avenue to the return feeders of a total sectional area equal to 6,848,000 circular mills. The drop of potential between this point and the negative bus bars, if these carried the whole railway current would reach 12 volts at times. The distance is approximately 1,200 feet, that is, the drop of potential from these tracks to the station is one volt per 100 feet. This is altogether excessive, a voltage drop of one-half volt per 300 feet is usually considered large enough. The above condition is responsible for the trouble reported in district No. 4.

Tracks in Very Bad Shape.

Return feeders; besides the one stated above, are also used (see drawing No. 2), they are bonded to the tracks at different points of the system, but they are of comparatively small section and little current can be carried by them. To sum up it will suffice to say:

1. With the exception of Main Street from the Assiniboine River to the C.P.R. subway, Portage Avenue from Main Street to Hargrave Street, Notre Dame Avenue from Main Street to Charlotte, Corydon Avenue from Pembina Street to Lilac Street, Lilac Street from Corydon Avenue to Woodlaw Avenue and the tracks which are being now bonded with electrically brazed bonds (i.e., Dufferin Avenue and Logan Avenue) the track returns of the Winnipeg Street Railway Company are in very bad shape.

2. The load on the Mill Street substation and its location are such that it is not possible to return through the rails and return feeders only, the large volume of current required for the street railway service.

Electrolytic troubles and damage to the piping system and cables result from these two conditions and is spread out over the whole of the centre of the city, although it has appeared only, so far in certain districts.

Recommendations.

The cure for the electrolytic trouble should come from the Electric Railway Company as the city cannot do anything to protect its piping system from stray currents.

Remedial means are mainly those which I have already stated in my preliminary report dated April 1, 1909, and addressed to your secretary, namely:

1. Installation of substations at different points of the system—this with a view of diminishing the amount of current to be returned through the rails in the centre of the city.

2. Proper rebonding of all tracks that show defect.

3. Special bonding and cross bonding work at intersections.

4. A system of inspection of track returns by the railway company.

A substation system of power distribution will do away with the electrolytic trouble. At present the whole current for the railway service being fed from one station, gives rise to a concentration of current in the tracks situated in the heart of the city. The current density in the rail returns must be kept low. The soil in this city shows a very low resistance and only very small difference of potential in rail returns can be allowed. This must be assisted by a rebonding of the tracks which show defects, that is, which indicates excessive drop. All bonds showing a reading of more than 4.5, that is, whose resistance is greater than 4.5 feet of rail should receive attention and be made good. Track intersections should also receive careful attention, ground plates at sides of bridges to carry return currents from one side of river bank to the other must be done away with and insulated feeders placed instead.

Action By Company.

I am pleased to state that the Winnipeg Electric Railway Company is carrying its work along these lines. Following recommendations made by William B. Boyd, chief engineer, Toronto Railway Company and Toronto Power Company, Toronto, and approved by the writer, the Winnipeg Railway Company have placed orders for electrical machinery, which will be installed in three new substations located as follows: One substation near the car barns at Fort Rouge, another on the line running to the Country Club, approximately 17,000 feet from the Mill Street substation, and the third in the north end of the city near the car barns. This will reduce very largely the amount of current returning through the rails on Main Street. These rails are now very much overloaded with current.

In connection with the rebonding of the tracks, the railway company have now in the city, and in operation, a bonding car for electrically brazing copper bonds on the rail joints. This type of bond, carefully installed, will secure an effective system of rail return. It can be easily applied on old work with very little disturbance of pavements. Tests made on Logan Avenue, where this type of bond is in place, show very low readings of voltage drop. The work being carried out now by the railway company on Dufferin Avenue shows construction work of a very substantial nature and plans for special work at intersections submitted by the railway company to your city electrician and approved by the writer will give intersections with very small drop of potential.

Besides the above, the railway company have advised me through Mr. Boyd, that it is the intention of the company to carry out the following work of reconstruction of their tracks:

1. New rails on Broadway from Main Street to Osborne Street.

2. New rails on River Avenue from Main Street to Osborne Street.

3. New rails on Osborne from Assiniboine River to Spadina Avenue.

4. New rails on Academy Road from Wellington Crescent to Stafford Street.

5. New rails on Notre Dame Avenue from Nena to Arlington Avenue.

The Winnipeg Railway Company must be instructed to proceed with this rebonding work and with the installation of the substations without delay. The rebonding of the tracks must proceed at maximum speed, night and day, until the whole system is in proper condition. After this is done, all bonding of the rails to the telephone cables and pipes should be removed, as well as the ground plates at bridges. The amount of copper in the feeder returns from Main Street, corner of Portage Avenue, to the substation, must be increased to at least 10,000,000 c.m. and the railway company should be instructed to place these wires in the ground in approved conduit.

The writer also desires to recommend that following the termination of the work above outlined, that is, sometime in the fall, a survey be made to see results accomplished.

The third recommendation made, namely, that the railway company should maintain its plant in a high state of efficiency through a rigid inspection of the track returns, is of the greatest importance to the city and should be enforced. The track returns should be under test at all times, in order to remedy at once any faulty bonds as they appear.

Accurate records of the drop of potential at different points of the railway system should be kept by the railway company and be open to inspection of the city electrician.

If the above recommendations are carried out with a desire to obtain best results, troubles due to electrolysis will be practically eliminated. In conclusion, the writer desires to acknowledge his indebtedness to Mr. Boyd for his assistance in this investigation.

The electrolysis tests were carried out by Mr. Beaubien, electrical engineer, Montreal, assisted by Mr. McGinnis, of the Winnipeg electrical department.

NEW ENAMEL FOR PLUMBING GOODS.

The Standard Mfg. Company, Pittsburg and Toronto, has perfected a new enamel that should be os special interest to the trade. It is called Standard Cobaltum enamel, and its color is speckled blue-gray. It is fine in texture, and the fixtures to which it is applied are assured a pleasing surface, smooth and hard. It is claimed to be especially suitable for kitchen and laundry fixtures, as its color does not readily show stains or signs of abuse.

The new line will find, it is expected, an excellent market in those places where the water is highly mineralized, and it is, of course, particularly adapted for use in factories, shops, laboratories, etc. It is emphasized that Cobaltum enamel should not be confused with the enamel used in the manufacture of granite or agate kitchen utensils, as it is not only found harder, but has a different appearance, and is made of different materials.

Recently an Illinois paper emphasized that cut prices in plumbing goods are "a delusion and a snare and are to be avoided, as they invariably are a cloak for inferior and defective goods." It is explained that to the ordinary man there is no difference in the appearance of the wares, but he realizes his mistake when a defect develops in the enameling of the tub or the closet tank mechanism gets out of order. The paper concludes that one should be careful to confine his dealings to a responsible and reputable firm.

Cutting and Calking Soil Pipe

"Phoenix" in Domestic Engineering Tells How to Calk or Cut Soil Pipe and How to Treat the Stack.

Take pride in your craft, my boy, for if rightly mastered, it will give you the chance of earning better wages than most any other trade in the country.

Remember also that there are always places for foremen, estimators, superintendents, etc., who know the business, and that the best of those are men who have had the benefit of practical experience, and who have been wise enough to combine the same with technical information. It is up to you to grow wise enough to fill some of these positions in future years. Take notice that the bigoted and ignorant plumber who never improves, has nearly had his day, and tumble to the fact that in about ten years more this class of plumbers will have become a memory only; or else they will be working, or perhaps running, a bum shop in some country town that has no plumbing laws.

The improvements in various appliances and the quicker and better methods of building are bringing about an advancement in plumbing installation. This combination togehter with the strong fight for reliable goods and first-class work is giving better results and better material to the consumers.

Therefore try to keep up with the times.

Put in one or two evenings each week finding out what is doing in the craft in that part of the world outside of your town. Read a few boks or papers that relate to the trade. They will not hurt you and the chances are that they may do you good.

You will find that this twentieth century is going to be the greatest period of advancement, along all lines, that the world has ever seen, and that dreamers and mullet heads are not wanted.

One good idea, to-day, used intelligently, will bring a thousand times better results, in every way, than the application of a whole lifetime of brute force.

Customs and ideas that were thought good practice thirty or forty years ago, now belong to what might be called the "Dark Ages" of the plumbing business.

The man who has failed to keep pace with the times is simply thrown into the discard.

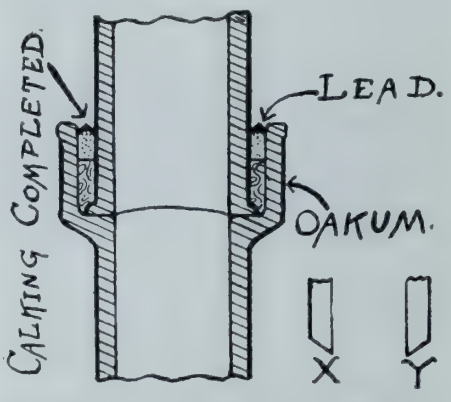
The notion in years gone by, that when a man became clever enough to wipe a joint, he was a plumber, has been exploded.

Modern appliances have brought about a vastly different system of work. Start an old timer (who has not keep informed) upon a modern bath room and he would be lost. He might be able to start the work, if some person told him the meaning of the details of sanitary science that applied, and which the law required.

A great number of vent stacks, drains, etc., are of cast iron, hub and spigot, pipe with lead calked joints.

The lengths of cast iron pipe are generally connected together as shown in the sketch, which illustrates a somewhat different method of calking in the lead.

The finished points of the calking chisels are shown by the drawing marked X and Y and the condition of the joint, when finished is also shown. This gives a firmer joint than the ordinary method as both sides of the lead are forced against the iron causing the lead to hug tighter. You simply calk in the outside and inside seams separately.



Condition of Lead When Calking is Completed.

Do not neglect to skim off the impurities which float to the top of the molten lead in the pot, for clean lead pours better and makes a more solid joint. The amount of lead used in joints of various size depends generally upon the fancy of the journeyman, and the honesty of the contractor, but at least one and one-half inches of lead should go into each joint. You can do a better job and make a firmer joint, if you roll the oakum into a rather firm rope, driving it down solidly strand by strand, and not all at the same time. If you try to drive the whole bunch in at once your yarning tool is liable to cut through the oakum leaving a space for the hot lead to drizzle down the inside of the pipe, or to form a puddle just back of the hub.

In either case this will form an obstruction sure to make trouble later on.

When you pour the joint, fill it full the first time.

Some plumbers think they get a tighter joint by making two pourings, but this is a mistake, as the lead never unites. Break open a joint so made and you will find two separate rings of lead.

The only place where two pourings to a joint should be made is on a piece of cut pipe, which might be very thin, leaving an unusually large space to fill with lead. In such a joint you may not be able to calk in the oakum without driving it through. If this is the case, first drive in the oakum just firmly enough to hold the lead from running through, and then make a light pouring. Drive this down solidly when cold, and then make a second pouring.

The lead in a joint should not be calked until the joint is cold.

If driven home when hot, the joint will contract a little when it cools, and probably show a leak on the test, requiring further calking to make it tight.

When you are hammering in the lead remember that you are expanding it, and every blow of your hammer adds to the force with which the lead presses against the iron. You may have a light "snip," and there you are—a broken hub. The next time you will know better, especially if the boss taken it out of your wages.

In case you have to pour a joint on horizontal pipe, calk in the oakum as previously described after having first thoroughly cleaned out all the dirt and moisture from the joint. Now put on the asbestos runner used for the purpose, or stop up the edges with rather stiff putty or clay. In case you use clay or putty, do not force it against the edges too hard or you will push it too far into the joint, and not get a complete ring of lead around the pipe. Leave a small opening on top shaped like the letter U having the points resting against the edge of the hub. Into this hole pour your extra hot lead until the hole is full and then quickly remove the runner clay or putty, and see if you got a full joint. If not, pull the joint apart at once, before it cools, and do the job over, rather than try to cobble it up by a second pouring or calking in cold lead.

In cutting soil pipe into the different lengths required on any job, stick to the hammer and cold chisel. Some people on large jobs, when a vise is handy will use a pipe cutter for this purpose. If your pipe is thin on one side, as it is very apt to be, you will probably crush the pipe or perhaps split the end and destroy more pipe than the value of the time you would save by not using the hammer and chisel.

It is not a long job to cut off a piece of pipe after you have the hang of it and know just where to strike and how much force to use, and this particular sense of muscular fitness will come only

with practice. Draw a chalk line around the pipe at the point where it is desired to make the cut.

Lay the pipe upon the ground or floor and directly under the chalk line place a board or block. Now roll the pipe following your chalk line all around the pipe with hammer and cold chisel until you have completed a circle. In going around the pipe the second time strike much heavier blows, especially where the wall is thicker. With practice, you can tell by the sound, when striking, just where the thick and thin places are in the pipe.

If the stack has been run through any room in the house, and is to remain exposed, it may be desirable to paint it, or possibly cover it with a coating of bronze.

Should you bronze or paint the cast iron pipe as it comes from the factory, in about 48 hours you will have a most beautiful decorated thing on your hands, with as many colors on it as Joseph's coat. The tar strikes through and produces rainbow colors, and unpleasant remarks from the owner upon general appearances, and ignorant workmen.

Before bronzing or painting, cover the pipe with a couple of coats of shellac, and when it is thoroughly dry apply the paint or bronze and your job will pass inspection.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

A. A. Earl, plumber, Toronto, has assigned.

K. W. Fessenden, plumber at Waterloo, Que., has assigned.

Barriball & Blackmore, plumbers, Huntsville, have assigned.

Napoleon Lepine, a Montreal plumber, died recently at that city.

The assets of J. A. Primeau, plumber, Montreal, have been sold.

Henry F. Dickie, plumber and steamfitter at Welland, has assigned.

A. King, Elgin, Man., has sold his plumbing business to G. A. McMorrow.

The plumbing business of G. Way & Co., Vancouver, has been sold to Chas. Mee.

Dallaire & Daoust, plumbers, St. Boniface, Man., have dissolved partnership.

The assets of J. L. Sasseville & Co., plumbers, Magog, Que., have been sold.

A. Rogers, Hamilton, was under the weather last week owing to a sprained ankle.

George McDonald, Hamilton, has joined the staff of the Gurney Standard Metal Co., Calgary.

Dickinson & Allen, Hamilton, plumbers, sustained some loss through a recent fire in their premises.

The Toronto civic authorities hope to open the new Harrison public baths and laundry before the end of October.

The plumbing, hardware and tinsmithing business of James Chalmers, St. Mary's, Ont., is advertised for sale.

Andrew Mallon, Hamilton, is retiring from the plumbing business, and will devote his efforts to boat building. A. Mallon, junior, will continue the plumbing shop.

W. J. Wall, manufacturers' agent, Montreal, representing the Crane Co., Chicago, has been on a visit to that city.

The contract for the heating system in the new Carnegie Library, at Preston, has been awarded to W. F. Mickus, Preston, rather than to Bernhart & Gies, as first reported.

J. L. Ross, treasurer of the Pease Foundry Co., Toronto, and of the Pease, Waldon Co., Winnipeg, is in Winnipeg and expects to remain with the branch there for some weeks.

T. C. Collins & Son, representatives of the Standard Sanitary Mfg. Co., Pittsburg, have moved from the Commercial Exchange Building, Montreal, to No. 215 Coristine Building.

George McAdam, an employe of the Western Heating & Plumbing Co., Saskatoon, and a brother of Mr. McAdam, of that firm, recently left for Edmonton, being presented with a fine pipe before going.

Kingston plumbers are looking forward to having a very busy season next summer, as the result of some stringent rules along sanitary lines, put through by the Board of Health. The order of the board calls for this work to be done in 1910.

Owing to increasing business, the Canadian Wolverine Co., Chatham, manufacturers of brass goods and plumbers' supplies, are installing a new 30-horse power gas engine in addition to the present 35 h.p. engine. This means a large increase in the factory's output in the near future.

Paul A. Smith, Windsor, is starting in business at Chatham under the name of the Windsor Gas Appliance Co., with store and office at 20 Pitt Street West, and will handle gas ranges, heaters, radiators, etc., and do gas-fitting work.

The Canada Pottery Co., Iberville, Que., with a capital of $90,000, has been incorporated to manufacture sanitary porcelain baths, lavatories and all kinds of pottery. The incorporators are Alb. Clayton, O. Couturier and Arthur Clayton, Iberville.

T. A. Cowan, plumber, steamfitter and electrical contractor, Brantford, is now comfortably settled in his new quarters on Colborne Street that city. The store is in a splendid position for transient trade, and is well lit up, and has much storage capacity in the rear.

L. J. Ruth, Ridgetown, has returned from a trip to Toronto and Niagara Falls. Mr. Ruth conducts the Ridgetown Acetylene Machine Co., dealing extensively in machines for producing acetylene gas, in addition to which he does plumbing, gas-fitting, roofing and tinsmithing work.

All Calgary master and journeymen plumbers must pass a theoretical and practical examination before a board composed of Chas. E. Goode, representing the master plumbers; J. Berwick the journeymen plumbers, and City Plumbing Inspector Fletcher. The system is favored by all plumbers.

A few of the plumbing and heating contracts being filled at present in Winnipeg are, the Fisher & McArthur building, by Thomson & Horner; Oldfield, Kirby and Gardner building, Portage Avenue, by Cotter Bros.; Kenmore building, Rossland apartment block, Hutchinson warehouse and Winnipeg paint and glass building, by Bearcto Plumbing Co.; St. Mary's Academy, by the Standard Plumbing Co.

Rather romantic was the wedding of Wm. Meadows of the Windsor plumbing firm of M. Meadows & Son, particulars of which have just transpired. Though the happy affair took place quietly at Chatham on May 2 last, the truth only leaked out about a week ago. The bride is Miss Loraine Chauvin, daughter of Deputy Game Warden Victor Chauvin, and almost immediately after the ceremony went for a trip up the lakes with a newspaper touring party.

The tests of two air lifts used in connection with the water supply of Palmerston, Ont., were recently reported. The wells are 8 in. in diameter and the air lifts in them consist of 5-in. education or delivery pipes, inside of which are 1½-in. air pipes. In one test 270 gal. were lifted per minute in each pipe through a distance of 39 ft. and 0.38 cu.

ft. of free air was required per gallon of water lifted. The air pressure was 31 lb. per square inch.

Green & Litsler, of Winnipeg, has secured the contract for the plumbing, heating and ventilation of the McArthur building, Winnipeg's tallest office building. The plant will be fully modern and the ventilation system will be particularly fine. Every office in the building will be supplied with fresh air, and in the winter this will be brought over tempering coils and through an air washer, and then forced into the various rooms. The contract price was $47,500.

On Sept. 13, Justice Saint-Pierre, Montreal, denied the application of the Standard Sanitary Mfg. Co., Pittsburg and Toronto, for an "interlocutory injunction" aiming to enforce the judgment given on May 17, against the Standard Ideal Co., Port Hope, enjoining the latter company against using the word "Standard" in connection with their enamelware products. The former company will now endeavor to enforce the injunction under section 971 of the Criminal Code, which provides penalties for disobeying the order of the court. The case will be heard at Montreal on Oct. 1.

Float Used by Wm. Stairs Son & Morrow, Halifax, in Labor Day Parade.

The Hamilton Fire and Water committee declared it inexpedient to instal the meter system in their city on a general scale. Statements were furnished showing that it would cost $350,000 to instal meters in every house, business place and factory in the city. The house meters would average about $13, while the meters for large consumers run as high as $600. The committee also decided to recommend that the $2 rate on baths be struck off, although Chairman Morris thought the tax should still be imposed and the amount lowered. The $3 rate on closets will remain.

Plumbers who have contracts in connection with the new courthouse at Vancouver are loud in their complaints over the slow work of the contractors. The stone walls have been standing all summer, with hardly a bit of work done, though it was anticipated that by the rainy season the roof and dome would be on so that inside work could be gone ahead with. Instead, the work will have to stand over until spring, even if the roof were started immediately, as it could not now be finished. This being the case, the contractors for inside work have all their material on hand and this amount of money will be tied up for several months yet. It was expected that inside work would have been under way by this time.

WINNIPEG'S POOR SANITATION.

For several months the Sanitary Association of Winnipeg, has endeavored to bring to the attention of the City Council the unsanitary condition of the sewers and sewer outlets of the city. Heretofore they have not received much recognition through the columns of the local press, since it was generally considered that some of the reports and suggestions of the association were exaggerated and unreasonable. A few days ago, however, there appeared an extended article in one of the dailies, enlarging upon the horrible condition of a sewer outlet on the Assiniboine river. Some of the members of the association had visited the sewer mouth at a time when the water was low, and all the foul discharge was exposed. Of course, the case was put in strong terms, and special mention was made of the sewer carrying refuse from C.P.R. town in the northwest part of the city, and also from an abattoir in the same section.

The Sanitary Asociation is an extremely aggressive body, and deserve credit for the persistent manner in which they follow up such nuisances as are detrimental to the public health. It is to be regretted, however, that there is little harmony between the association as a body and the City Council, and no doubt both bodies are to blame. The Sanitary Association recently prepared drawings for the construction of a sewerage system, which would solve the problem of having debris from the abattior emptied in an undesirable section of the city. The city, however, which was represented by a special committee refused to look at the drawings, and intimated that they could look after details themselves. The plans of the association were unworkable, since they would incur an expense of about $7,000,000; but even that was no reason why the committee should have shown themselves unfriendly. As a result of the coolness with which the association has been treated by the City Council, the association is appealing to the Provincial Board of Health, in order that some immediate steps may be taken to remedy conditions. The case of the above mentioned sewer will be made as strong as possible, and the drawings rejected by the public works committee will again be submitted to the Board of Health. Other matters will also be brought to the attention of the Board of Health respecting modern sanitary and building by-laws, and tenement house by-laws. These are other strings upon which the asociation have been harping for some time, and have received scarcely any recognition. It must be said in all fairness to the civic committees that they have been working hard for months on the above mention by-laws, and also on the electrical and plumbing by-laws, which have been under consideration by the council since last spring. The city plumbing inspector said recently, that the sanitary and building by-law, and also the tenement by-law would soon be completed, and then the electrical and plumbing by-laws would be considered.

WINNIPEG'S DRINKING FOUNTAINS.

The City engineer's department in Winnipeg will instal seven sanitary drinking fountains on Portage Avenue and Main Street. Excavation for these was begun on September 22, and it is expected that all seven will be completed before the severe frost comes. The city has two fountains in operation in front of the City Hall, which were installed in

June last. These are entirely satisfactory from the standpoint of economy of water, convenience and sanitation.

A new registry office will be erected in Hamilton.

The Montreal Roman Catholic School Commissioners have taken out a building permit for a new solid stone school to be erected at 695 Fullum Street, at a cost of $83,000. The building will stand sixty feet high and will be heated with hot water coils.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Public Buildings.

A $13,950 fire hall will be erected at Winnipeg.

Ald. Brocklebank has commenced work on the erection of Calgary's new public library.

A new Anglican mission will be erected at Brantford, and work will be commenced shortly.

The proposed additions to Grace Hospital, Winnipeg, will cost in the neighborhood of $30,000.

Winnipeg will build an annex to the civic building on James Street. The addition will cost $11,000.

Geo. Stirrett has secured a permit for the erection of a block of stores and apartments to cost $60,000.

An addition will likely be made soon to the Residence Building at the Ontario Agricultural College, at Guelph.

J. Fowler, Goderich, is preparing plans for an addition to the hospital in that town. Approximate cost, $4,500.

Contracts have just been let for the new wing at the Hotel Dieu, Kingston, and work will be commenced this fall.

The general contract for the erection of a Jewish Synagogue at Lachine, Que., has been awarded to Simpson Bros., Lachine.

The contract for the new Union Realty Co.'s building at Brantford has been let to Schultz Bros., and work will be commenced immediately.

Winnipeg's school board is anxious to have a by-law submitted authorizing the raising by sale of debentures of a sum of $600,000 for new schools.

The Peterborough City Medical Association have approved of the plans of Architect Blackwell for the new Isolation Hospital to be erected there.

Excavation has commenced for the erection of a new brick, fireproof theatre at Owen Sound. The building will cost from $10,000 to $12,000. The contractor is John H. Moore.

The Montreal Light, Heat & Power Company, have awarded the contract for the erection of a building in the east end of the city to D. G. Loomis & Sons, Cote St. Paul.

A building permit has been issued to the Salvation Army for a $25,000 addition to their Metropole Building at Toronto. The addition will be five storeys high, plus basement.

The Catholic School Commissioners have awarded the contract for the erection of St. Charles school for boys at Point St. Charles, to S. Marchessault, at a cost of $60,000.

The sum of $23,000 is to be expended on repairs and alterations to St. Mary's Cathedral, Kingston, including electric lighting and fixtures, $1,500, and instalation of the ventilation system, $1,500.

A decision has been made by the Public Library Board as to the site for the new Hamilton library. It is the intention of the board to begin building operations as early as possible in the spring.

A sanatorium will be established at Manitou Lake, Sask. The charter of the company will be issued and the erection of the building will be begun this fall. It is planned to have the new hotel open for business early next spring.

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Yours truly,

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Woodstock city council have so far committed themselves to the new Delatre Street school proposition as to authorize the city solicitor to prepare a by-law providing for the setting aside of $30,000 for a new building, and for the repair of the Beale Street school.

A referendum will be submitted to the Brantford ratepayers for a new market building, in connection with the proposed location of a new postoffice on the present market square. The proposed site is suitable in every way, and the buildings proposed would cost about $50,000.

Contracts were recently let for a new public school building at Goderich, at a total cost of $22,130. C. J. Harper is the successful tenderer for the plumbing, galvanized iron work and electric wiring, the figures for the three contracts being respectively, $820, $765, and $250. C. C. Lee received the contract for a heating system, the figure being $1,959.

A new building 60 feet square to house the heating plant that will supply warmth to the new hotel, station and the G. T. R. buildings at Ottawa was decided upon some days ago, and work is already well under way on the foundation. The new building is situated to the east of the station annex. The buildings will be heated by steam and a most elaborate and modern plant will be installed.

Municipal Undertakings.

Nelson, B.C., will spend $5,000 on sewerage works.

A new sewer will be constructed on Clifton street, Winnipeg.

A number of sewers will be constructed at Collingwood this fall.

A new sewer will be constructed on Bridge street, Sackville, N.B.

Armstrong, B. C., ratepayers favor spending $10,000 on improving the water and light services.

Fort William has accepted Engineer Galt's plans for the new waterworks intake pipe to cost $30,000.

Some of the larger Ontario plumbing houses are figuring on a 15,000-gallon tank for the London waterworks.

The London Water Commissioners expect to have approximately 10 per cent. of that city's water system metered by the end of the year.

The purchasing agent of the Victoria City Council has awarded the contract for 5,000 feet of galvanized water pipe to C. M. Cookson at $16 per 100 feet.

The St. Thomas municipal L. H. & P. department's new side line, steam heat, is being sought for by practically all living within the radius of the supply pipes.

Guelph on Sept 23 celebrated the opening of a waterworks system, which has just been completed at a cost of $125,000. Lieut.-Governor Gibson performed the formal ceremony.

Tenders were opened last week for the million-dollar contract for widening the Montreal aqueduct. F. H. McGuigan, Toronto, was one of the eleven who tendered, and Quinton and Robertson, Montreal, were lowest. Decision was deferred.

The whole sewer system of London is said to be demoralized. So bad have conditions become that Willis Chipman, consulting engineer, Toronto, the man who put down the big system of 1906-7-8, has been wired to make a report on the question and recommend what is to be done.

Over ten miles of steel pipe, costing over a million dollars has been ordered by the Esquimalt Waterworks Co. from the Vulcan Works, Motherwell, Scotland, to bring the Goldstream water to the City of Victoria. Delivery is to begin on March 1, and 55,000 feet of steel pipe is to be landed before June 30 next.

Tenders for 2-in. galvanized water pipe were received by the Victoria council from the following: Colbert Plumbing Co., $16.90 per 100 feet; Hickman Tye Hardware Co., $18.91; Bownes & Co., $17.70; E. G. Prior & Co., $19.50; B. C. Hardware Co., $19.30; C. M. Cooksson, $16.00; Walter Fraser & Co., $19.30; Andrew Sheret, $18.20. The tenders were referred to the plumbing and purchasing agents.

The contracts for part of the new sewerage system for Orillia, amounting to $34,109, have been awarded. Contract "A," sanitary sewers, J. A. McIlwraith, Collingwood, 111,815; "B," receiving basin and pumping house, T. Clement, Orillia, $6,175; "C," laying force main pipe, J. A. McIlwraith, $3,828; "D," cast iron pipe, Canada Foundry Co., $8,125; "G," machinery, J. McDougall & Co., Montreal, $4,166.

General Building Notes.

Col. H. J. Grasett, Toronto, will build an $11,500 residence.

A. T. Davidson will build a $15,000 residence at Winnipeg.

W. R. Emery, Fort Frances, has plans for a $3,000 residence.

Ottawa Oddfellows are considering the erection of a new building.

F. C. Burroughes & Co. will erect a $12,000 warehouse at Toronto.

T. L. Neish, is building at Carlyle, Sask., a stucco residence, to cost $5,000.

Chas. S. Shipman will erect at Winnipeg, an apartment block to cost $17,000.

At Toronto, S. B. Coon will erect four pairs of dwellings at a cost of $17,600.

B. H. Fraser, Toronto, will build four pairs of dwellings at a cost of $11,500.

Hill & Dennis, at a cost of $12,000, will erect two rows of dwellings at Toronto.

Hy. Fleming is commencing the erection of a store building at Collingwood.

An addition will likely be built to the Empress Hotel at Victoria this winter.

Six detached dwellings will be built at Toronto, at a cost of $24,000, by T. A. Duggan.

The Traders Bank will spend $16,000 on a block of stores and apartments at Toronto.

The Imperial Bank has purchased a site at Toronto for the ultimate erection of a bank.

A $10,000 brick store and dwelling will be erected at Toronto by Jas. Lochrie.

Geo. Sheard will build at Toronto, at a cost of $12,000, three attached dwellings.

Ald. W. R. Osborne has decided to build a store at Galt, adjoining his present property.

A site has been secured at Winnipeg for the erection of the new Y.M.C.A. building there.

G. Williams, Toronto, will erect two pairs of semi-detached dwellings at a cost of $10,000.

Three attached stores and dwellings will be built by J. J. McKinney, Toronto, at a cost of $12,000.

E. J. Dobie has taken out a permit for the erection of a dwelling at Vancouver to cost $3,600.

W. Bell, Brantford, has a permit for the erection of a dwelling on Brant Avenue to cost $2,500.

Two pairs of semi-detached dwellings to cost $10,000 will be erected by A. B. Coleman, at Toronto.

G. F. & J. Galt have been granted a permit for a warehouse, six storeys high at Winnipeg. The cost is $65,000.

George Stirrett has secured a permit for the erection of a block of stores and apartments at Winnipeg, to cost $60,000.

A permit has been granted to the Rookery Building Co. to erect at Winnipeg a three storey block to cost $155,000.

The following are building at Keeler, Sask.: Dr. C. E. Chandler, A. W. Fumerton, F. D. Hetherington and Thos. Wall.

Peden & McLaren, have prepared plans and are inviting tenders for a house for Mr. Templeman at Montreal West.

The newly incorporated St. Regis Hotel company, Montreal, capitalized at $100,000, will erect a modern six-storey restaurant.

Arthur J. Bird, has prepared a set of plans for the new frame apartment house which Seabold & Roberts are to build at Vancouver.

The Montreal Fire Department have awarded the contract for the erection of the new upper level fire station to Damien Lalonde.

The following are building at Eyebrow, Sask., R. A. Porter, Geo. Peever, Dan McPhail, W. J. White and Mr. Finkleman.

Bannerman & Horne, Victoria, have secured a permit for the erection of a new brick warehouse and office building at an estimated cost of $22,500.

The St. John Real Estate Co. is commencing the erection of a six-tenement wooden building. Wm. McDonohue will do the plumbing work.

A permit for the erection of a warehouse for the International Harvester Company was taken out lately at Calgary. The building will cost $75,000.

The rebuilding of the portion of Cobalt which was swept by fire is progressing apace, according to the reports of provincial officers recently returned from the north.

A building permit was issued at Vancouver for the erection of a business block to cost $145,000. The building will be erected for G. E. Bower and will be eight stories in height.

T. D. J. Farmer, Hamilton, has instructed an architect to prepare plans for a hundred thousand dollar office building, eight storeys high, to be built at Winnipeg.

Permits have just been issued recently at Victoria, as follows: F. W. G. Baylis, frame residence, $2,500; R. M. Sanborn, frame building, $2,600; Wm. Turpel, a dwelling to cost $1,950.

The following building permits were taken out at Hamilton lately :—Orr & Orr, brick dwelling and store, for Mrs. H. Stewart, $2,200. E. B. Patterson, brick dwelling for D. Fallahee, $1,700.

The following are building at Sackville, N.B.: J. E. Smith, residence; Prof. Hammond, 2 houses; Williams and Woodworth, dwellings. Over $100,000 worth of new buildings will be erected this year.

Negotiations are under way for the erection of an $85,000 hotel at Fort William by A. Buie, of Dauphin and Grandview, Man.; F. A. Myers, Fort William, and C. Rooke, a Winnipeg business man.

A company of Vancouver capitalists is being organized for the purpose of erecting one of the largest apartment and store buildings in that city. In all probability the building will cost not less than $145,000.

Including several business blocks, about $200,000 worth of buildings has been started in New Westminster this year, with a prospect of a quarter of a million more being begun before the winter is over.

The Lacey Brothers who recently purchased the West hotel at Fort William, have bought the 25 feet of frontage immediately south of the hotel where they purpose erecting a three storey addition, work upon which will begin at once. The addition will cost $10,000.

The contract for the new building for the Banque Provinciale du Canada, to be erected at Moncton, has been awarded to Philip N. LeBlanc. The building will be three storeys high. The contract for the heating and plumbing has been awarded to H. G. Hagan & Co.

The contract has been let at Winnipeg for the erection of the seven story warehouse of the Gutta Percha Rubber Company. The Lyall-Mitchell Company, of Winnipeg and Montreal, contractors for the new Union depot, were the successful tenderers, and the contract for the completed building will amount to $100,000.

The contract for the new consolidated school, which is to be built at Kingston, Kings County, N.B., to replace the one which was burned in April, has been let to Leonard Fairweather, of Hampton. The work will be started at once and the cost will be about $12,000.

The contracts for the erection of the hydro-electric stations at St. Marys, Stratford, Berlin and Guelph, were awarded to Edge & Gutteridge, Seaforth at $18,700 each. Those at Preston, Paris, Woodstock and St. Thomas, went to John Hayman, of London, at $19,850 each.

Recent permits issued at Winnipeg include: A. Simmons, house, $5,000; E. E. Wise, house, $3,600; J. W. Parker, house, $1,700; B. Donner, house, $2,800; Joseph Grapski, house $1,000; D. Corbett, eight dwellings, cost $8,000. B. J. Smith, two dwellings, $4,000; A. Asselstine, dwelling, $2,000.

The following permits for dwellings were issued recently at Ottawa: J. E. Northwood, brick veneer dwelling, $3,500. James Kelly, brick veneer dwelling, $1,500; Frank Wilson, brick veneer dwelling, $1,700; Mrs. A. T. McPherson, brick veneer dwelling, $1,600; A. S. Moodie, brick veneer dwelling, $2,600; J. H. Burbridge, brick veneer dwelling, $3,000.

The following contracts for buildings were lately awarded at Montreal :—R. Morris, contract for M. K. Cowan residence; Peter Lyall & Sons, residence at Westmount for Lt.-Col. Smart; Robertson Bros., residence at Ste. Agathe des Monts, for Dr. R. S. Patterson; J. H. Hutchison, $20,000 residence for Percy P. Cowans; Alex. Brosseau, residence for Dr. F. De Martigny; Jas. Murison, residence for B. W. Grigg.

Among the more important building permits issued at Montreal early last week are the following: Jos. Grenier, two houses, $4,000 each; Sisters of St. Sulpice, two buildings, $500 and $5,200 each respectively; T. Lebel, three houses, $4,000; L. Clement, two buildings of three houses each, $6,000; Jos. Dupuis, dwelling house, $3,500; Mrs. Ed. Roy, house, $3,000.

The following building permits were issued during the past week at Quebec :—Building for J. A. Choquette, cost $8,000; J. Villeneuve & Fils, addition of flat to property of Drouin & Freres and Geo. Tanguay, cost $2,000; L. Picard, construction of building, $7,000; L. Leclerc, two stores, $3,000; T. Guy, building on St. Anselme Street, A. Marois, contractor, $4,000; F. Dupuis, building on Queen Street, $1,200.

Construction will shortly be begun on what will be one of the finest office building in Calgary or the west. It will be known as the Leeson & Lineham block. The building will cover two full lots, will have six stories and basement, and will reach a height of 84 feet. Hodgson & Bates are the architects for this building, which will be constructed at a cost of $100,000.

Among the new buildings for which permits were issued at Vancouver during the past week was one for a $95,000 brick hotel to be erected by C. C. Smith. Another item was for a $15,500 apartment house on Bute Street. A large number of apartment houses are going up in different parts of the city, but principally in the west end, toward English Bay, which is the most popular residential section.

Building permits have been awarded recently at Calgary to the following :—Oswald J. Hurst and F. W. Clay, for $1,500 houses in Sunalta; A. G. Foster, a $2,000 house; G. E. West, a house in Elbow park, $2,800; Fred Johnston stables to the value of $3.200; M. R. Edwards, $2,000 house; Burton Goodwin, a $1,500 house; Thos. Montgomerie, a $1,200 house in Sunalta; R. J. Colgrove, a couple of $1,000 houses, one in Bridgeland and one in Elbow park; W. C. Armstrong, an $8,500 residence; Howard Templeton, a $2,000 house; J. W. Speer, a $2,000 house; E. H. Oliver, a $2,000 house; H. Darling, a $3,200 house; M. Kenny, two $1,500 houses. Permits were also granted for eight or nine small buildings.

Building permits were granted at Vancouver last week by Inspector Jarrett as follows: S. J. Wing, three houses, $4,050; Geo. Doran, $1,500; T. J. Whiteside, $2,500; J. Andrews, $1,700; Thos. L. Grey, frame dwelling, $3,000; J. E. Guinet, frame dwellings (2), $3,600; Nixon & Wright, frame dwelling, $2,500; Alma Dobson, frame cottage, $1,000; James White, three frame dwellings, $12,000; A. Frome, frame dwelling $2,000; Jas. White frame dwelling, $2,500; E. Miller, frame dwelling, $2,200; G. C. Ossenger, frame dwelling, $4,000; E. J. Escott, frame dwelling, $4,600; T. M. Henderson, frame dwelling, $6,000; H. Mitchell frame dwelling, $2,600; A. E. Greening, frame dwelling, $5,600; Donald McDonald, frame dwelling, $1,800.

Recent building permits at Vancouver include W. Maudsley, dwelling, $1,800; J. D. Murray, dwelling, $2,000; J. A. Jackson, dwelling, $1,800; E. J. Dobie, dwelling, $2,600; Shearer Cont. Co., dwelling, $2,200; W. J. Barnes, dwelling, $1,400; J. Bentley, dwelling, $3,200; A. Knight, dwelling, $3,000; Stuart Lumber Co., dwelling, $4,000; J. Abrams, dwelling, $1,900; F. N. Trites, dwellings (6), $7,200; C. F. Eddy, dwelling, $1,000; Allan McVicar, dwelling, $2,900; E. E. Hewson, dwelling, $1,200; R. J. Coleman (2) dwellings, $5,600; Thos. Martin, dwelling, $1,200; C. J. Church, dwelling, $1,700; C. A. Dool, dwelling, $1,800; G. Tyson, dwelling, $1,000; Mrs. E. M. Dominey, dwelling, $1,000; Great Northern Transfer Company, $1,000; Mrs. E. Demming, $1,000; G. Tyson, $1,000; Mrs. A. Wilson, $1,200; J. Bently, $3,200; A. Knight $3,000; Stuart Lumber Company, $4,000, and J. Abram, $1,900.

PLUMBING AND HEATING MARKETS

MONTREAL.

September 29.—There is a very good tone to the markets. Plumbers are purchasing freely, and with prices very firm, jobbers are satisfied with the situation. Soil pipe and some sizes of iron pipe continue scarce, and will be so until the demand slackens down towards the end of November. Supplies in other lines are sufficient for the demand at present, and it is not anticipated that any difficulty will arise in this direction, although prices may advance.

Radiators and boilers are now moving very freely, as many houses are taking their heating equipment. New residences are also being started, so it is expected that the demand will keep up well until the winter arrives. Jobbing work is also very good, and plumbers generally are busy. Three Rivers continues to be a good buyer of material, and some heavy consignments have been dispatched there recently. Other outside points are also buying well.

Prices are unchanged, although two or three lines show marked firmness. Solder especially is stiff in price. The new discount sheets in brass have been issued, but the trade has not yet decided to follow it and the old discounts still obtain in many instances.

Judging from the building situation there is plenty of work in front of plumbers right up to the winter, and even later. Altogether the fall trade has fulfilled expectations and manufacturers, jobbers and plumbers seem satisfied with the state of trade.

SOIL PIPE—The scarcity continues in soil pipe, and manufacturers cannot catch up with the demand. Not only is the local want heavy, but outside points are buying freely. The market is firm, and we quote: light 60 off, medium and extra heavy 70.

LEAD PIPE—The demand is still very active, some good orders being received locally. The market is firm, and the supply is sufficient to take care of the demand. We quote: pipe and waste at 27½ off; traps and bends at 50; caulking lead at 5c per pound.

SOLDER—The market is very firm, but no change has been made. Plenty of solder is going out, and is being used immediately, so that stocks continue light in users' hands. We quote: 19½c for half and half, and 18½c for wiping.

IRON PIPE—Delivery is hard to obtain in the smaller sizes, although the pinch is not felt so acutely as in soil pipe. With a very active demand, and the market strong in the States, prices here are stiff. We quote: ¾-inch to 4-inch; black, 72½ off; galvanized, 62½ off.

RADIATORS AND BOILERS—Boilers, radiators and fittings are now being shipped freely, houses being ready for their heating apparatus. The season has proved very good up to now, and promises to continue so. We quote: Steam boilers are 60 and 10; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 10; steam radiators, 50.10 and 2½ per cent.

ENAMELWARE—Jobbers are shipping very freely, many residences being now ready for their enamelware. Owing to the demand, jobbers' stocks continue light, and manufacturers are still only able to supply immediate requirements. Prices are firm.

SCRAP METAL—There is very little change in dealers' buying prices. Lead is a little weaker. There is, however, not much scrap on the marker, and the market is inclined to be dull. We quote: Heavy copper and wire, lb., 11c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6¼c; tea lead, 2¼c; heavy lead, 2½c; scrap zinc, 3c; No. 1 wrought iron, $11; machinery cast scrap, No. 1, $14; stove plate, $11; malleable, $12; miscellaneous scrap steel, $6.

METAL—The metal markets are unchanged, with good buying going on. The primary markets have been fluctuating with a tendency on the whole to improve. We quote jobbing prices: Ingot copper, 14½c; ingot tin, 33c; lead, $3.45; pig iron, Middlesboro No. 3, $16.50 to $16.75; Summerlee, $18.75.

TORONTO.

Sept. 30.—The condition of the plumbing and heating situation at present continues excellent. The markets, too, are firm, and in the case of hot-water boilers the price has advanced. The new brass discount sheets are not yet ready and it may be early in October before they are published.

The great majority of the local master plumbers and heating engineers have much work on hand, and all the supply houses report inquiries for large stocks Some cut prices on baths, it is rumored, have been offered in some sections of Western Ontario, but no actual sales at the low prices are reported, though the uncertainty has dampened to some extent the business of houses quoting the market.

The fall promises to be active right up to the cold weather, and just now the older houses have all their available men working to the limit.

ENAMELWARE—Baths are said to be offered at cut figures, amounting in some cases to 10 per cent. off the lists in a few sections of Ontario, west of Toronto and north of London. While no actual sales are reported to have taken place, yet it cannot be said that none have been made. This situation has upset slightly the business of houses quoting the market in that area. Other enamelware lines—sinks, laundry sets, and closet combinations—are active in both town and country, and baths in Toronto are greatly in demand.

BOILERS AND RADIATORS — Thirty-gallon hot-water boilers have advanced 25 cents and are now quoted at $4.75. Demand has greatly increased for the since last issue. A little cutting exists in a couple of the larger centres. Shipping of large sized steam and hot water boilers and radiators keeps up apace, but the placing of orders has lightened somewhat. Prices are unchanged: Steam boilers are 60 and 10; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 10; steam radiators, 50.10 and 2½ per cent.; and angles and curves, 25 per cent.

BRASS GOODS — The new discount sheet affecting brass prices has been still further delayed, and another week may go by before it finds its way into the hands of the trade. Trading is increasing:

IRON PIPE AND FITTINGS—Galvanized pipe is $6.19 for 1-inch size, and black pipe is $4.54 for the same size. Malleable fittings are going out well. They are at 40 per cent. discount. Cast iron fittings are at 65 per cent. off. There is practically no change in either the conditions prevailing or in the market. Demand is still heavy for the smaller sizes of black pipe.

LEAD PIPE—Sales are not big. The country is slightly free in demand, but the city trade is light. Prices remain the same: Pipe and waste are 27½ per cent.: traps and bends, 50 per cent.; and calking lead 4½ cents a pound.

SOIL PIPE—This line has been provocative of much business during the whole month of September and prices have been firmer than at any time since the opening of the year. Present trading is good.

SOLDER—Stocks are high, but the big demand has tended to firm up the market. A great lot of solder is changing hands these days. Prices hold their own unchanged, since last quotation. Wiping is 18½ cents, and half-and-half 19 cents.

NEW LIST ON BRASS GOODS.

The National Association of Brass Manufacturers at its recent meeting at Detroit, directed its officers to petition transportation companies to make an equitable adjustment of freight rates on plumbers' brass goods and plumbers' supplies on all territory north of the Ohio and east of the Potomac rivers and to extend as far west as the Mississippi river. It was also suggested that it would be desirable to establish a uniform centre of bath cocks when furnished with offset supplies.

The new discount sheet applying to the new official catalogue was also adopted at this meeting, and both the catalogue and the revised discount sheets will hereafter be furnished to any legitimate manufacturer or jobber in the United States or Canada upon request to Commissioner W. M. Webster, 1112-1114 Schiller building, Chicago. Four new members, three from the United States and one from Canada, were admitted to membership in the association at the meeting.

The New British patent law is looked upon with much dissatisfaction in Germany. It is stated that the large majority of German patent holders will try to sell their patent rights in the United Kingdom to Britsh companies, while only a very small minority may erect works of their own in the United Kingdom.

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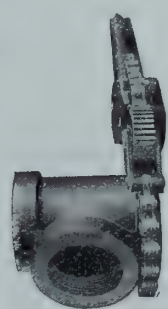

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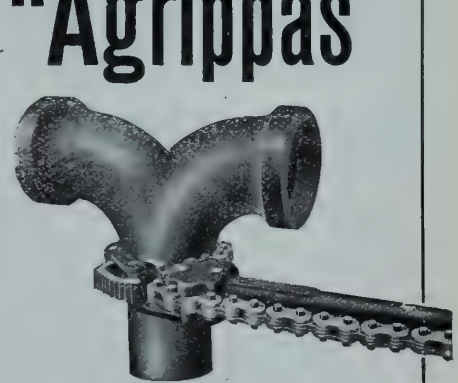

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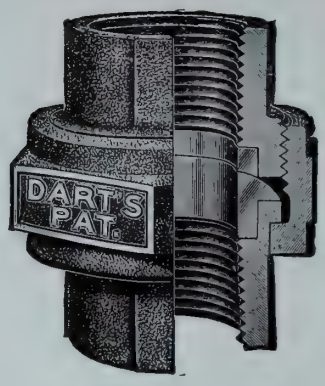

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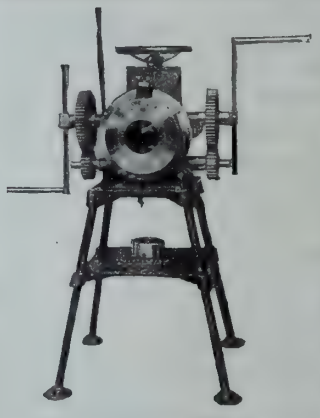

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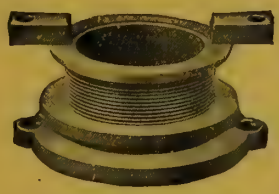

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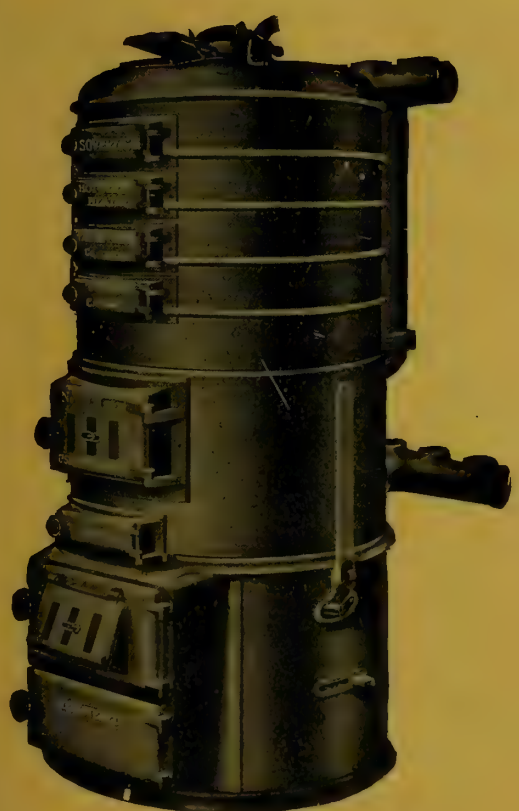

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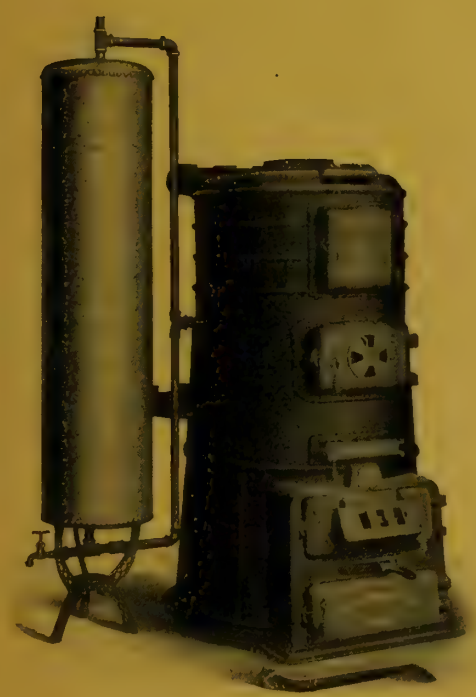

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A Morse and Dexter Improved Valve Reseating Machine

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You have all experienced the annoyance, trouble and expense caused by **Leaky Steam Valves.**

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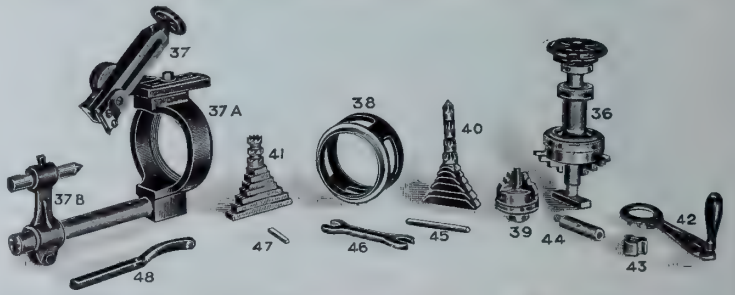

Darling Brothers, Limited, Head Office and Works, **2-4 Ottawa St., Montreal**

TORONTO — WINNIPEG

SAY! LOOK HERE!!

LET'S HAVE A CHAT ABOUT THE

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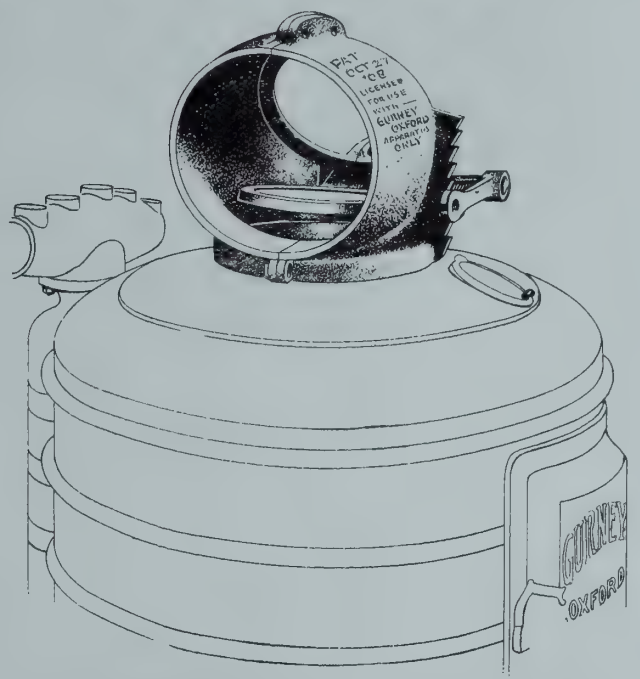
THE WONDERFUL CONTRIVANCE THAT TO-DAY IS THE TALK OF THE HEATING WORLD . . .

¶ IT SAVES 20% OF THE FUEL BILL AND THAT'S WHAT YOUR CLIENT WILL APPRECIATE MOST.



The "ECONOMIZER" is fitted to every Gurney-Oxford Boiler, and is licensed for use only on same.

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THE GURNEY-FOUNDRY CO., Ltd.

TORONTO HAMILTON MONTREAL WINNIPEG
CALGARY EDMONTON VANCOUVER

GURNEY-OXFORD

Plumber and Steamfitter

and Sanitary Engineer of Canada

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TORONTO, OCTOBER 15, 1909

MASTER PLUMBERS AND LIABILITY INSURANCE.

While master plumbers may decry the necessity of protecting ourselves with liability policies, said G. A. Richards, in an address before the recent National Plumbers' Convention at Detroit, our very business life and credit are jeopardized if we do not, for we are now held responsible under the law for accidents caused by the carlessness of fellow servants and other conditions beyond our control. To illustrate, we are liable for injuries caused by an unskillful and incompetent fellow employe if it can be proven that the employer did not use due care in selecting such employe. Further they assume only such risks as are incident to their employment and which are apparent to others; they are not presumed to look for hidden dangers or defects. They may recover, even though they knew of such defects and were not protected against them. A young person may not be exposed to danger, although the danger would be obvious to an adult of ordinary intelligence.

Possible Dangers and Suits.

You may be sued by a person not in your employ if the injury was caused by the negligence of your employe or because of a defective condition on or about your premises. Your delivery horse may run away; you are liable for the damage resulting. A drain layer and his helpers may be buried in an excavation that he had full authority to properly curb, and you may have supplied all necessary material and given positive instructions for their use, and still be held liable and mulcted for damages; it is your duty to see that he does use them. A citizen may fall in a trench, either on public or private ground, and it is up to you to prove that it was properly guarded and lighted and that there was no contributary carelessness on your part. Contributary negligence is the slightest want of ordinary care contributing approximately to the injury. Persons other than employes accidentally injured about the premises or on streets opened by you invariably suc for damages regardless of their own responsibility or the existence of negligence on the part of others. Suits for damages may be brought long after the accident occurred. In all cases when the evidence is in any way conflicting on a material point the question is for a jury. You can easily guess where an employing plumber would ordinarily get off. These and many more seemingly hard laws are the result of decisions renederd that were the exact reverse and which placed all of the responsibility on the employee.

Ratio of Loss to Pay Roll Should be Known.

We are still behind Great Britain and Germany and ther countries in the amount of protection and liability given and an awakening public opinion is demanding that laws concerning the interests of all shall be framed. The expense of all forms of liability insurance is based on the payroll of the employer, a percentage of that forming the premium. Under present conditions we, as master plumbers, are interested in seeing that we are getting a rate proportionate to the risks involved in our particular calling as compared to other risks. There is a feeling that the present classification and consequent rate is not based on statistics of injuries received by our employes, but rather that we are carrying part of the load of more hazardous occupations. Could not the machinery of the national organization be profitably used in gathering such information as would enable us to determine the ratio between loss and pay-roll? This we cannot expect to be given us by the insurance companies. With this information in hand we would be in a position to demand an equitable rate or, failing in this, could through our new thorough organization proceed to carry the risks of our members by means of a company organized by ourselves. Under present conditions if we wish full indemnity we are obliged to take out separate policies for our employes, for the general public, for our teams and for a variety of other possible losses. In fact I am amazed when I realize the possibilities of damage litigation. Fortunately we can say with the old gentleman, "I am an old man and have had many troubles, but most of them have never happened." From the information at hand I am convinced that all of these several liabilities could be profitably carried at the price now charged for employers' liability.

Burden of Protection Should be Divided.

Accidents are always calamities, the resulting distress is always borne by those dependent on the injured. If they jointly are unable to carry it, society has to step in and help share it. We replace defective, worn out and broken machinery, and such expense is termed operating or overhead expense, and is looked upon as inevitable. Why them should not the business equitably bear the loss visited upon the human machine?

Sociologists believe that an ideal law should be so framed that the payment for accidents by the employer should be automatic instead of as at present a matter for lawsuits, workmen receiving certain and definite compensation for all accidents regardless of negligence. The spirit of such legislation being based on the principle that the employer is the agent of the public and conducts the business for his own profit. He sets in motion agencies which create risks for others, and he should therefore take all the ordinary and extraordinary risks involved, and the risks that he thus assumes should be

ultimately assumed as it ought to be by the public. By the exacting of such a law the shock of the accident would be diffused and would not, as it now does, fall on those least able to bear it. The benefits would be twofold. First, certainty of obligation; second, riddance of the present necessity of litigation to determine the obligation; third, the workman and his family would be relieved of the crushing load of disablement and death.

The principle that upon the employer should be placed the entire trade risk is the end to be sought; he in turn recouping himself by an adequate additional charge to cover this additional load. At present the insurance companies are betting us we will not have an accident that entails a liability collectable under our present statutes.

In conclusion, does business judgement demand that we protect our credit rating and accumulated assets with employer's liability insurance? Second, that an effort should be made by ourselves to gather the proper statistics that an equitable rate may be determined. Third, failure to obtain such a rate should move us to take such step as may be necessary to carry the risks by a mutual plan. Fourth, we as citizens should recognize that liability laws have proven a failure so far as any adequate compensation to the workers as a whole are concerned, and should lend our aid in assisting in devising better protection, both for our employees and ourselves.

JOURNEYMEN GAIN A POINT.

In the Court of King's Bench, at Winnipeg, the case of Cotter vs. the Plumbers' Union, came up for trial after having been thrashed out in the courts for over a year. The plaintiffs in June, 1909, secured a judgment against defendants for damages arising out of the defendants interfering with the plaintiffs during the plumbers' strike. Execution was issued, but nothing realized, and upon an ex-parte application by the plaintiffs an order was made for the appointment of a receiver for the union, and subsequently an application was made to continue that order. The chattel property was not of sufficient importance to justify the appointment of a receiver, but the dues and assessments owing were considerable.

His Lordship, in delivering judgment, referred to the constitution which governed the plumbers' union, and stated he could not find any contract whereby a member agrees to pay dues. In his opinion there was nothing of value for the receiver to collect, and the plaintiff's motion was, therefore, dismissed with costs. As the case stands now, the master plumbers cannot collect damages from the union, whose books were returned to them by the court.

MICROBES IN SEWER AIR.

Recent investigations made by Dr. Andrews, published in the last annual report of the Local Government Board of the British Government would appear to prove beyond dispute that sewage microbes are to found in sewer air.

"Whether it is the presence of these microbes that accounts for the excellent health enjoyed by sewermen we are unable to say," says the Plumber, London, Eng., "but the discovery, long suspected but hitherto not definitely ascertained, opens up a large field for conjecture. The question now to be settled is: How far from the point of their inception are these microbes to be found? Are they present in the air of drains when the seal of the intercepting trap may be defective; and again, assuming that they can travel as far, is the ordinary trap any hindrance at all to their progress?"

OFFICIAL NEWS

N. A. M. P. & S. F. of CANADA

OFFICERS 1909-10

President,—Joseph Laurier, Montreal. Vice-Pres.,—G. H. Cooper, Toronto.
Treasurer,—H. Mahoney, Guelph. Secretary,—H. W. Munday, Montreal

Provincial Vice-Presidents,—Nova Scotia, Frank Powers, Lunenburg; New Brunswick, Wm. Watson, Moncton; Quebec, J. E. Walsh, Montreal; Ontario, R. J. Shannon, Toronto; Manitoba, R. L. Beattie, Winnipeg; Alberta and Saskatchewan, E. J. Young, Calgary; British Columbia, John Colbert, Victoria.

Chairmen of Committees,—Legislation, H. A. Knox, Ottawa; Sanitary, P. C. Ogilvie, Montreal; Apprenticeship, J. Griffin, Montreal; Essay, E. Russell, London.

Next Convention will be held at Toronto the last week in August, 1910.

TO MASTER PLUMBERS IN ONTARIO.

Gentlemen,—After returning home from our 1909 convention, the idea of organization comes again to our mind.

Having been elected vice-president for Ontario it is my duty to get in touch with you. You have received your Plumber and Steamfitter (Convention Number) and have read about the change in name of our association. Now, I would like to have your views on this question. You are not only helping me in this work by replying, but you are helping yourself. Now, just after lunch, take a minute. Write me a postal letting me know what you think of the proposed "Canadian Society of Sanitary and Heating Engineers," and I will greatly appreciate it.

ROBERT J. SHANNON,
Vice-President for Ontario.
1233 Queen West, Toronto, Oct. 9.

SUPPLY MAN'S GOOD SUGGESTION.

H. W. Anthes, general manager of the Toronto Foundry Co., has put forward what seems to be a practical suggestion regarding the re-organization of the trade in Ontario. His idea is for a committee of supply men to tender a dinner to the master plumbers of London, St. Thomas and Stratford, at London, some evening, in order to get the men in the trade better acquainted, and discuss the advisability of forming a provincial sanitary and heating engineers' society, to ask the Government for legislation enforcing better sanitary conditions, the Ontario Government, having already made a start in this direction in the Cobalt district. Mr. Anthes says that if the idea works out, other dinners might be arranged at such centres as Berlin, Windsor, Hamilton and Kingston.

Another supply man, discussing the matter, gave it his approval, and referred to the inability of the boiler and radiator manufacturers to maintain their prices, instancing a big slash made on a recent order in Toronto, one concern offering reduced prices to a director in a competing company, and this in the face of advancing prices of pig iron.

The opinion was expressed that until the trade gets together the manufacturers will continue to cut each other's throats in the matter of prices, the result being demoralizing to all branches of the trade, and also tending to lower the standard of work done.

Mr. Anthes' suggestion is timely and should be taken up by supply men who have the interests of the trade at heart.

KINGSTON SETS GOOD EXAMPLE.

A resolution passed by the Kingston Board of Health, states that after May 1, 1910, no privy vault, cess pool or reservoir into which a privy water closet, stable or sink, shall be hereafter established or maintained within the limits of the City of Kingston, within a certain boundary, and that the method of disposal shall be by means of water closets, sinks and proper fixtures, connecting and discharging into sewers.

The Making of Soil Pipe and Fittings.

Process of Manufacture Used in the Plant of Anthes Foundry, Ltd., Toronto —Machines do a Large Part of the Work—Well Lighted and Modernly Equipped Plant—Finish on Pipes Differs from Goods Manufactured in the United States.

Back in 1894 H. W. Anthes and E. W. B. Snider established a soil pipe plant on Niagara Street, Toronto, under the name of the Toronto Foundry Co. In 1900 a charter was secured as an incorporated company with Mr. Snider as president and his two sons, W. W. and C. W. as vice-presidents, Mr. Anthes continuing in charge of the industry as general manager, while his son, L. L. Anthes, was appointed superintendent. Two years later, in 1902, the industry was moved to Atlantic Avenue, near the Exhibition grounds, and a thoroughly modern foundry building constructed. And now another change is being made, the old name being discarded owing to its similarity to many others, the distinctive name of Anthes Foundry, Limited, being substituted. Mr. Snider and his sons, will still maintain their financial interest in the company, devoting their time to the Waterloo Mfg. Co., Waterloo, Ont., and the active management of the foundry will continue, as before under the direction of H. W. and L. L. Anthes.

Fig. 1—General View of Anthes, Limited, Pipe Foundry.

On approaching the plant one is naturally struck with its architectural features first. In the design and construction of the buildings care and consideration have been given to each detail which would tend to cut down unnecessary labor, and at the same time give a plant that was adequately protected from fire, well lighted, properly heated, and in every respect satisfactory.

The offices, pattern and machine shops occupy a rectangular building, 50 x 75 feet, at one corner of the plant. Beneath the offices there is a fire-proof pattern vault with concrete ceiling and self-closing fire doors. Under this part of the building are also the wash-rooms and the warehouse for snap-flasks, follow-boards, and similar equipment.

The foundry proper is divided into two parts, the entire foundry being 75 by 200 feet. Two-thirds of the floor is devoted to the manufacture of soil pipe, and one-third to the manufacture of fittings. For lighting the building side windows and a double monitor roof are used, the latter extending lengthwise over the foundry. Between the two monitor roofs there is a sunken gutter, which is very plainly shown in Fig. 1. Beneath this sunken gutter are supported the trolley tracks for carrying the iron in ladles to the fittings floor. The cupola is located midway of one end of the soil pipe shop and the overhead trolley system passes in front of it. The finished pipe is taken out on an industrial railway system.

The soil pipe manufactured varies from the heaviest to the lightest and from two to eight inches in diameter. Green-sand cores are employed in all of the work, both for fittings and for pipe. The flasks are all ground on the joint to insure accurate fitting. By traversing the flask back and forth under a revolving wheel, the joint is very quickly ground true and straight.

The molds are made on specially constructed molding machines. Patterns are arranged to strip down through the plate far enough to thoroughly release them from the mold. The cope and drag portions of the mold are exactly like each other except for the gates. The heavier sections are gated on each end, while the lighter pipe is cast two pieces in a flask and gated on the sides.

Special Core Making Machine.

For making the cores for the pipe a special machine has been designed by L. L. Anthes and it turns out green-sand cores with remarkable accuracy and rapidity. One of the working sides of this machine is shown in Fig. 2. The machine is constructed double so that cores may be made on each side. The sand is elevated from the boot to sand hoppers above by long elevator buckets. In the bottom of the hopper there is arranged a bar, carrying teeth, which can be reciprocated by the eccentric shown just above the workman's head. When the mechanism is started, this bar with the teeth projecting from it causes the sand to flow in a steady shower and fall upon the cast-iron arbor. These arbors are first wetted and then rotated by a suitable crank, the arbor being supported in chilled bearings and the sand struck off to form the core by a straight-edge as shown. The sand in falling packs sufficiently so that the cores are made very quickly. As soon as the cores are made they are lifted out and placed on horses ready to be set in the molds as they are required. With the foundry running to its full capacity in turning out a carload of soil pipe a day it is necessary to operate both sides of the core machine, which keeps four men busy.

The core sand is kept separate when the castings are shaken out and by mixing a little new sand with the old it is again used, the only sand ordinarily discarded being that which passes out with the work as it goes to the tumbling barrels.

Molding Machines.

The molding sand is used over and over, new sand being added to keep the pile up to strength. The molding ma-

chines are arranged to slide along the floor upon railroad iron guides which are permanently set into the floor each side of the sand heap, so that the workman is always near his work.

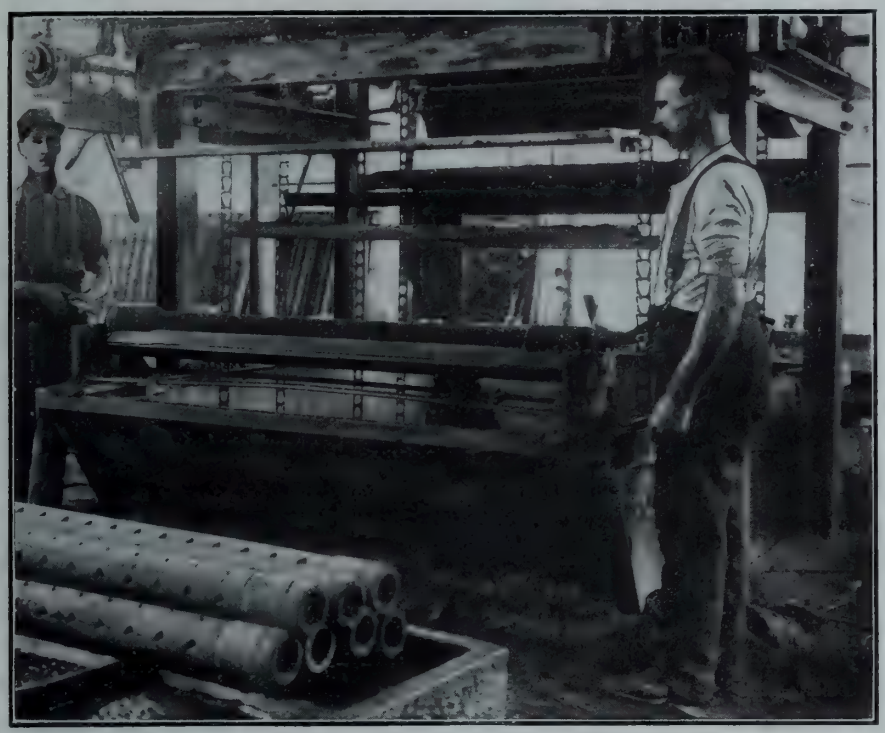


Fig. 2—Side View of Green Sand Core-Making Machine.

Fig. 3 shows one of the molding machines at the end of a row of completed molds. In the illustration a machine is shown with a cope flask in place and the sand hopper on top of it. A little facing sand is first riddled on top of the pattern and the hopper then shoveled full of heap sand. The molder first peens one side and then the other of the mold, after which he removes the hopper and buttrams the heap of sand left in the centre.

Making Fittings.

The fittings are all made with split shell patterns so arranged as to leave their own green-sand cores, as shown in Fig. 4. The patterns are in halves so as to form the green-sand core on the inside of the pattern and the mold on the outside. In the centre of the illustration referred to is seen a follow-board with the pattern and sprue in place. The cope and drag portions of the flask are held together by small wedge clamps slipped over chucks as shown. In the making of a 4-inch offset the drag half of the pattern is laid in the follow-board and the core arbor or anchor placed in position as shown. These arbors are made in two or more pieces to suit the irregular form of the cores. The joints are dovetailed together, the parts being formed in chills so that they always fit accurately.

For all but the largest sizes of work, the foundry is equipped with carefully made iron flasks for use in connection with the manufacture of both pipe and fittings. The hinges used on all these flasks are so constructed that the cope may be rolled back and blocked in a vertical position. Some of the advantages of iron flasks are that they take up less space on the floor than wooden flasks and are less cumbersome. They are more durable, as they do no burn as do wooden ones, nor do they wear as rapidly. The iron flasks roll over better than wooden ones. They also take up less space in the flask storage, and the fire risk is eliminated.

For the medium-weight pipe two beads are used on the bell in place of one. The use of an extra bead around the base of the bell stiffens it and makes it better able to resist calking. The heavy fittings are made without the extra bead, as is the case with most fittings turned out in the United States.

Cleaning the Pipe.

The castings are tumbled in ordinary stave mills. Up to this point the practice does not differ greatly from that found in many foundries in the United States, but the finishing of the pipes for the market is radically different. In the United States some of the pipe is dipped in a tar kettle, and in other cases it is marketed without any finish whatever; the reason for the latter practice being that the laws in many of the States demand that the pipe be left unpainted until after it has been installed, so that it may be thoroughly inspected. Where the pipes are left without tarring or coating they rust rapidly. The Canadian laws provide for the use of a coating of linseed oil. The linseed oil is thinned with benzine and the pipe and fittings are then dipped in this mixture and set up to

Fig. 3—Molding Machine for Pipe, with Flask and Sand Hopper in Place.

drain. Within a few hours the linseed oil has dried down to form a hard but thin coating which is transparent, so that the pipe may be inspected just as well as though not coated. At the same time this coating prevents rust and also forms an excellent base for the application of paint.

Every foundry has to adapt its practice to existing conditions. In Canada the market is limited, hence there is not so great a demand for each separate size and weight of pipe and fittings as in the United States. For this reason it would not pay to fit up for the immense tonnage that could be disposed of in the latter country. The heavy duty on soil pipe in each direction prevents the sale of Canadian pipe in the United States and of American pipe in Canada. However, Anthes Foundry, have a wide connection and some of the pipe is being shipped to the Pacific Coast.

The system of molding fittings used is especially adapted to the class of work being manufactured, and also to the relative number of pieces of each size which must be turned out. The

Fig. 4—Pattern for Pipe Fitting.

entire work of the plant is on a piecework basis and the greatest possible harmony exists throughout the entire organization.

The management of the foundry has always been progressive in providing the best facilities for the convenience and comfort of the workmen, and in looking after their welfare in every way. The plant is neat in every particular, the office being relieved from bareness by the presence of potted palms, and a portion of the grounds of the plant is sodded so that a green lawn is provided for the use of the employes during the noon hour and at other leisure periods.

For the storage of the finished work there are extensive sheds containing bins and racks for fittings and sufficient area for piling different sizes of pipe. Railroad switches enable the raw material to be delivered in carload lots and the outgoing product to be loaded into cars.

Class of Pipe Manufactured.

While all sizes of soil pipe and fittings, from two to eight inches are made, and some sinks, sink brackets, boiler stands, etc., are also manufactured, the bulk of the product is medium heavy soil pipe. A fair quantity of extra heavy pipe is manufactured, however, and a limited quantity of light pipe. These various sizes are manufactured by changing the pattern, the same cores being used and the difference being chiefly in the extra thickness of the iron in the pipe.

PATENTS RECENTLY ISSUED.

The following is a list of patents issued by the Canadian Patent Office, relating to steamfitters' and plumbers' appliances and furnished by Fetherstonhaugh & Co., Ottawa.

119738. J. J. Gottschalk, Taunton, Mass. B. W. Phelps, New Haven, Conn. Sanitary Pipe Stems.

119749. D. Diver, Deerfield, Mich. Filtering Apparatus.

119760. H. S. Lange, Christiana, Norway. Hydrants, Stand Pipes and the like.

119773. O. A. Modigh, Winnipeg. Water Pipe Connections.

119825. R. Philbert Buckingham, Que. Pipe Couplings.

120140. T. N. Furlong, San Francisco, Cal., combined wash tubs and sinks.

120181. W. A. Speakman, Wilmington, Deleware, Faucet Attachments.

120217. C. J. Pilliod, Frankford, Indiana, A. D. Baker, Swanton, Ohio, variable cut-off valve.

120242. W. Baker, Aberdeen, S. Dakota, steam valves.

120253. J. S. Chambers, Rocky Mount, N. Carolina, throttle valves.

120269. D. A. Gauthier, Ste. Anne de Bellvue, Que., pipe attachments.

120294. C. R. Mills, Malden, Mass., relief valves.

120302. L. J. Regsby, Lufkin, Texas, balanced valves.

120307. J. Schwab, Winnipeg, combination smoke and heating pipes.

120310. F. P. Sharp, Oakland, Cal., appliances for tapping water or gas mains.

120314. J. M. Sissons, Gerrara, B.C., fluid pressure valves.

120352. A. L. Wyman, Minneapolis, valve lifts, Gas Traction Co.

120372. S. A. James, Spiro, Oklahoma, pipe joining machines.

120373. S. N. Davis, Luton, Eng., W. R. Twigg, West Dulwich, Eng., radiators or other heating stoves heated by gaseous fuel.

120378. J. B. Beauvais, Holyoke, Mass., water heating apparatus.

120513. I. R. Cookston, Ottumwa, Iowa, water glass shields.

120527. T. Kobler, Chihuahua, Mexico, duplex gage cocks.

120527. J. M. Robertson, Montreal, Que., prepay attachments for meters.

120557. E. Schumacher, Buffalo, N.Y., gas burners.

120578. W. Mouat, Detroit, combined bath tub traps, overflows and waste fitting.

120648. C. E. Knickerbocker, Middletown, N.Y., water heating systems, and regulators therefor.

120670. T. B. Hensey, Adrian, Mich., stop and waste cocks.

120673. F. W. Leevers, Walthamstow, Essex, Eng., stop and through-way valves

120727. G. W. Mason, Sharon, Pa., wrenches.

120737. E. Ruud, Pittsburg, water heaters.

120766. E. L. Dawes, New Brighton, Pa., J. C. Reed, Pittsburg, Pa., drain connections, Standard Sanitary Mfg. Co.

120814. C. A. Carlson, Kennedy, Minn., water gauges.

120819. F. S. Chapman, Kenton, Ohio, soldering devices.

120869. W. S. Johnson, Pittsburg, drain boards.

120900. C. M. O'Daniels, Seattle, water gauges.

NEAT EXHIBIT AT VICTORIA.

The accompanying exhibit of plumbing goods made by Andrew Sheret, master plumber, Victoria, B.C., at the Victoria fall fair was managed by C. J. McDowell

Plumbing Display at Victoria Fair.

and S. S. Young, the two young gentlemen shown in the picture. Mr. Sheret states that the exhibit was a business bringer, he having secured several good prospects for jobs as a result of the display.

Some Suggestions for Running Water Pipe

"Phoenix," in "Domestic Engineering," Outlines Some Ideas Regarding the Laying of Water Service Pipe—Where the Pipe Should Enter the Building.

After the main is tapped the water pipe should be run inside the cellar wall, if possible, before leaving the job, even though one might have to put in a little "overtime." It is much better so, than to leave the ditch open subject to possible showers and a cave-in, or to run the risk of some one falling in, with the result of a suit for damages on deck.

By using a little forethought the water pipe can be all cut up at the shop as far as the cellar wall, which would, under ordinary circumstances, mean one or two cuts and threads only, to bring the line inside this wall ending with the stop and waste; thus giving perfect control of the

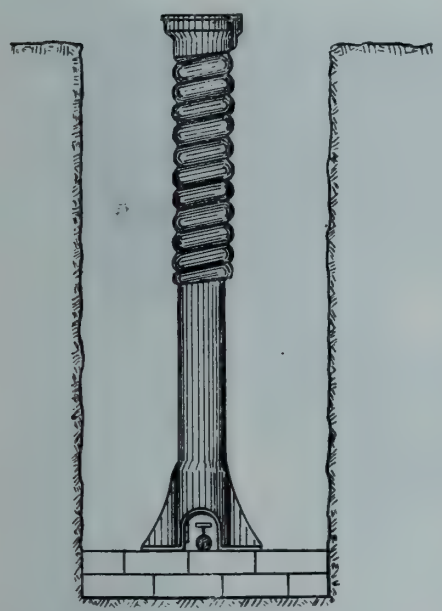


Fig. 1.—Locating Service Box on a Safe Foundation.

job, and the remainder of the work all under cover.

The plumber can remain in the ditch, his helper passing down the pipe from the bank and assisting in sending it home where full lengths are used. Fourteen and eighteen-inch pipe wrenchs are the handiest for ditch work. They are plenty powerful enough for the size of pipe generally used in this service, which is ½-inch and ¾-inch galvanized.

The line can be dropped in and made up to the point where the service box is to be set in about fifteen minutes or less, depending upon the distance the pipe is to be laid. Then open up the stop cock and have the corporation cock turned on full head. Let all the chips and dirt blow out, after which close the stop cock only. Right here the test comes of the line up to the stop cock. If no leaks are found the ditchers may begin filling in the dirt just as soon as the pipe is secured around the corporation cock as explained in a previous article.

The journeyman should attend to setting the service box, because if left to the ditchers or helper it will nine chances out of ten be literally thrown in any old way.

In the first place this service box should be set upon some kind of a foundation. Flat stones will answer, but a few old brick will be found much better placed as shown in Fig. 1, which also shows the cut-off. The box should be surrounded with bricks or stone so closely packed that no dirt or mud will work in to cover up the cut-off cock making it impossible to catch it from above later on with the key. For this reason if a really first-class job is expected, these brick should be laid in cement and that portion of the service box be made entirely water tight. Before bricking up, remove the cover of the service box and fit the key to the cut-off cock, making sure that all is plumb and that this cut-off cock can be quickly and certainly grasped by the key.

It may be worth many dollars some day to the owner of the building to be able to cut the water off quickly at this very point. It is well to so adjust the length of the service box that the cover will be about two or three inches above the surface of the ground. When securing the cover a few drops of oil placed upon the screw will prevent its sticking when it is desired to open up the cover at a later period.

After the service box is set plumb and foregoing matters properly attended to, some dirt should be thrown around the box and tramped down, after which the journeyman and helper can rush the remainder of the pipe line, speedily getting it laid to the point inside the cellar wall where the stop and waste will be placed. When putting in this second run of pipe the helper should stay upon the bank. A board laid across the ditch will keep the end of the pipe out of the mud or dirt until the journeyman can reach it, to make the proper connections. The couplings, or "knuckles" should all have been reversed and put upon the opposite end of the different lengths of pipe previous to their being used. This gives fresh good threads all around and saves time lost in monkeying around trying to catch bum threads. Many times a man is called upon to make a cut in the ditch in a ¾-inch, or possibly as large as 2-inch galvanized water pipe, for the purpose of putting on more house services; the large mains being located too far away for practicable tapping.

If the galvanized pipe is in sound condition a three-wheel pipe cutter can be used and a section about two feet long of this galvanized main cut out. If a joint fortunately appears at this point it may be used with advantage. Should the pipe appear soft or somewhat rotten, a hack saw will do a better though slower job. In putting threads upon the pipe remaining in the ditch a ratchet stock is best, but not entirely necessary.

The pipe should be prevented from screwing in, while cutting these threads, by a wrench braced against the side of the ditch. If the pipe is merely ½-inch or ¾-inch it can be sprung out of line sufficiently so that the new pieces can be made up, after which the faces of the union will just touch when it is desired to couple up. On larger pipe it may be

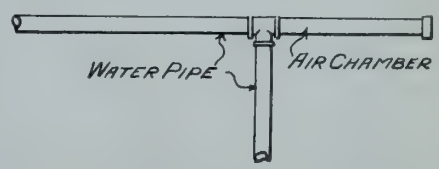


Fig. 2.—Turning Corner at End of Long Run of Pipe.

necessary to cut a running thread using a lock nut to make tight, and screwing up the first piece to the extent of the running thread in order to make room for the second piece, and afterwards backing off piece number one until the two pieces face up, following with the lock nut and packing to make tight.

Sometimes it is desirable to lower a four, six or eight-inch street main. This can be done without shutting off the pressure or cutting the main. The only inconvenience is merely closing down the corporation cocks along the line, and cutting loose the house service. The ditch should be dug to the bottom of the main, and then shoulders or pedestals of dirt left under every hub, the ditch between each hub being dug as deep as it is desired to go. Then the diggers can be strung along the ditch one at each hub, letting the main down slowly by digging away the dirt left under the hubs about two inches at each lowering of the main. The weight of the main and water still in it will force the main to follow the dirt and the whole line for several blocks

at a stretch may be lowered in this manner.

Of course two or three joints will be sprung a little and leak some, the pressure being on full head, but the lead still remains in the hubs and these leaking joints can be easily and quickly stopped by hammering down the lead in them home once more. Then the water services may be spliced in again and the plumber's part is done.

When the journeyman is ready to run the water pipe in the cellar and to the various fixtures in the house it is best to look the cellar over and ascertain the safest manner to lay out the lines.

Safety should not be sacrificed for distance in order to reduce cost, for one freeze up and the resulting split pipes will cost much more than a few feet of extra pipes.

Avoid the cellar windows and doors, and keep, if possible, four or five feet away from the outside wall. The pipe should be reamed from the point where it leaves the corporation cock up to the connection of the last faucet. Sometimes pipe which is not reamed produces a very unpleasant singing noise, much to the annoyance of the occupants of the house. The pipe should be fastened securely everywhere and in such a fashion that it will be impossible for it to vibrate and on horizontal runs a slight pitch should be given the pipe toward the stop and waste.

Do not use any dope or similar composition in making up the joints. Lard oil is sufficient. No first-class workman requires any dope to make the joints tight. Sometimes, at the end of a very long run in the cellar, where a turn is made similar to Fig. 2, it is well to put on an air chamber. A 6-inch nipple and cap will answer for this purpose, and serve for an air cushion, enabling the water to get around the corners in an easier fashion.

Avoid the use of the street ell entirely. It is a bum fitting at best and four out of five used will result in a leak, as they are seldom threaded and tapped correctly. The cross-over is another fitting which should be used as little as possible for it is generally not the full size inside of the pipe to which it is connected. Many times cross-overs are nearly filled up with irregularities which cut down the flow of the water.

The David Craig Co., of Boston, Mass., makers of cement and plumbers' supplies, and capitalized at $1,500,000 is desirous of establishing a Canadian branch in the Maritime Provinces, and has applied to St. John for a lease of some property there.

Water Supply Systems for Country Residences.

A General Talk on the Equipment Necessary for Supplying Water to Country Residences and Institutions in Isolated Locations.

By A. E. Hansen, C.E.

A high degree of dependence is necessarily placed by the owners of highly developed country estates or by the management of isolated institutions, on the systems supplying their properties with water for all conceivable purposes, such as drinking, bathing, kitchen and laundry, garden and lawn sprinkling, fountains, cattle, and vehicle washing, and fire protection; the more isolated and developed the property the greater the importance of a constant and abundant supply of pure water under sufficient pressure, and the more serious the consequences when any one of these conditions fails to obtain whether they be caused by inefficient foresight shown in the design, inferior material or workmanship used in the construction or unintelligent service rendered in the operation.

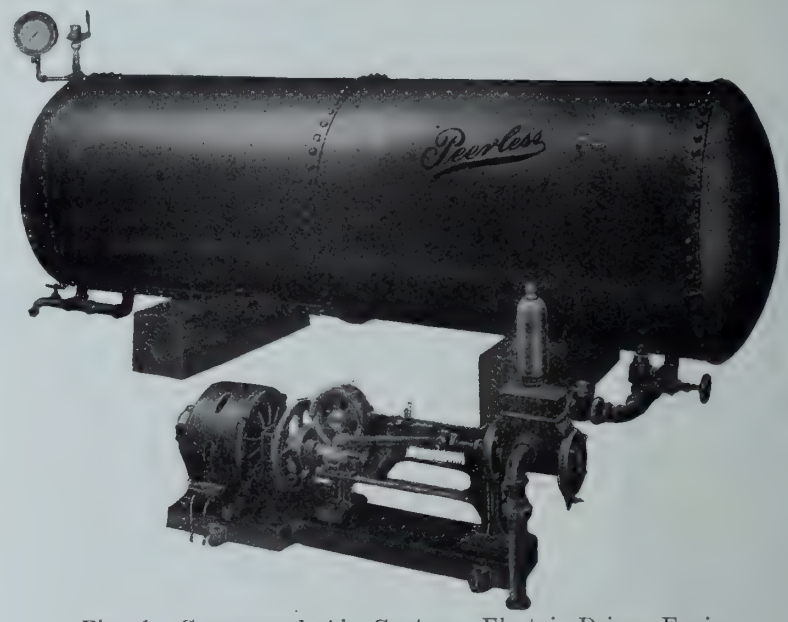


Fig. 1.—Compressed Air System—Electric Driven Engine.

Undoubtedly the most serious question in connection with a water supply system is the purity and wholesomeness of the water itself. Sometimes a casual inspection will show that the water cannot possibly be pure and reliable owing to unclean conditions surrounding its source and occasionally such nuisances can be abated by slight changes in existing conditions, but more frequently a physical inspection shows no immediate contaminating influences and it is then necessary to submit the water to searching bacteriological and chemical tests which will beyond a doubt establish its guilt or innocence.

A sparkling water is by no means a safe water. Filtered sewage may appear clear as a crystal and yet it is inadvisable to trust to its complete purity and allow it to enter a water supply system of the type under consideration.

Surface waters, including shallow or dug wells, brooks, lakes, and generally springs, are especially subject to contamination and water derived from such sources should always be looked upon with suspicion until it has been proven by analysis safe; such sources, if they show pollution at all, will generally show it after a heavy rainfall.

Sub-surface waters are derived from drilled wells and may sometimes outcrop from ledges on the surface of the earth as springs. The theory that these waters are always wholesome and pure has been proven untenable, since wells hundreds of feet deep, especially in limestone formation, show pollution upon analysis which is easily accounted for by rock fissures through which unfiltered sewage or stable drainage finds its way unmolested to the underground water courses.

Deep wells generally show continuous rather than intermittent pollution, and if once proven safe may be accepted as safe for years to come provided surrounding conditions are not altered.

Besides being pure the water should be relative soft. In the case of institutions this is of especial importance since it is a matter of constant expense to soften the water for laundry and boiler purposes by means of an especially built apparatus. Quality without quantity in the case of a water supply system is

poor asset and analyses of water which are not sufficient in yield are expensive luxuries. The owner should take particular pains, therefore, to ascertain the amount of water obtainable before having an analysis made.

Springs can generally be gauged by placing one or more pipes through a miniature earthen dam and collecting the water in a vessel of known contents for a stated time. In the case of brooks the method used most frequently is the measurement by weir, that is, the flow of the water through a notch of known dimensions cut in a board. In the case of exceptionally straight or large brooks and rivers, measurements are taken by floats especially adapted to this purpose.

In the case of shallow wells a hand pump discharging the water into a barrel of known capacity is generally resorted to unless a power pump is available for the purpose of a test. Deep wells must always be tested by means of a power pump and care should be taken to ascertain their yield at a depth of at least 100 to 150 feet below the surface. Deep wells should always be tested continuously for at least 24 hours.

Considerable judgment must be used in interpreting the results of gaugings with regard to the weather conditions immediately preceding the measurements and with regard to the prevailing seasons. During the spring and fall months it is frequently impossible to obtain reliable information as to the dry weather flow of springs or brooks; and in the case of brooks with comparatively small watersheds a heavy rainfall will enormously increase the flow, while a few weeks of drought will reduce it possibly to a negligible quantity.

If investigations are made during the wet seasons, it is always wise to deduct from the flow then apparent at least 50 per cent. in order to obtain the available quantity during the dry summer months. Deep wells are not so much influenced by the variation in rainfall as shallow wells, springs and brooks. In fact many deep wells have shown no decrease whatever in volume during the past excessively dry season.

Whatever the source of supply may be, arrangements should be made in every well designed water system for storage either in wooden or steel tanks, masonry reservoirs or impounding reservoirs. The amount of storage depends largely on the consumption as compared to the yield, and to a lesser degree also on the probabilities of a temporary shut-down of the pumping plant for repairs.

The type of reservoir to be used depends on such a number of factors that it is impossible to give them all; utility, efficiency and appearance are of course the leading considerations, not to speak of cost which unfortunately too many times is the deciding element.

In connection with the question of storage it should always be borne in mind, however, that sub-surface waters should never be stored in open basins, but always away from the influence of sunlight.

Whenever possible, water should be stored above the ultimate points of delivery so that in cases of breakdown of the pumping machinery no interruption in the service will occur; but additional storage should be provided, if feasible, near the source of the water supply in case the latter should fail.

The question of pumping machinery is one of utmost importance; it is the heart of the water supply system and none but standard machinery should ever be installed. It is poor policy indeed to decide upon certain machinery simply because it costs less; it costs more in the end and always is the cause of great annoyance.

There are a number of standard rams, pumps, gasoline engines, windmills, and electric motors in the market which are reasonable in first cost and cost of maintenance. The owner should not forget that the manufacturer of the poorest trash has learned to enumerate points of excellence about his machinery which are indeed only "talking points," whereas the really important parts are of absolutely inferior construction or material.

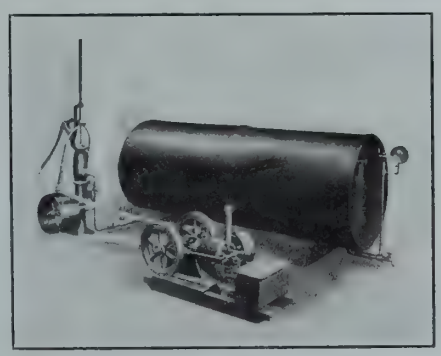


Fig. 2.—Gas or Gasoline Engine.

Windmills on small estates generally answer the purpose if installed by reliable manufacturers; they are, however, quite out of the question as a main motive power for water pumping on large estates or for large institutions. Gasoline or oil engines, while generally more expensive in first cost than any other motive power, are the cheapest of the reliable machines in operation.

Electric motors are advisable whenever the current can be procured at reasonable cost; ordinarily, the cost of operation of a pumping plant in the country by electric motors is from three to five times that of operation by a gasoline or oil engine. When the cost of electric current is excessive, it is frequently advisable to have a duplicate power generator; one, a gasoline or oil engine for constant use, the other, an electric motor, to be operated only in case of a breakdown of the engine.

Oil engines for country places are less to be recommended, though somewhat cheaper in operation than gasoline engines, and much is hoped from the use of denatured alcohol as a fuel. Hot air engines are cheap to operate, but not to be recommended for high duty; rams or so-called hydraulic engines are frequently the cheapest and best but require a large amount of water and some pressure to drive them. Double-acting rams have come largely into favor in recent years since they will deliver pure water, such as filtered or spring water, while being operated by polluted water.

Water wheels and turbines are not much used where water supply is the only desideratum, but in the case of large institutions, they are installed to furnish power for electric lighting principally, and for water supply incidentally, and require large quantities of water under considerable head; the best types of these machines, as manufactured now, are very inefficient indeed.

In order to deliver water to the buildings or other required points, it is necessary to make provisions for certain pressure. Where the source of water supply is located sufficiently high above such points, the problem is ordinarily a very simple one, since a storage reservoir near the source will also act as a pressure reservoir. Such cases do not, however, occur frequently, on account of the fact that buildings are generally and properly placed on the highest part of the available property. In the latter cases, an elevated tank, a stand-pipe, or an air pressure system are about the only alternatives, and all three of these are filled by the pumping machinery previously outlined.

Sometimes all buildings are placed above the water supply source but below the highest part of the property. In such cases a masonry or concrete pressure reservoir may be almost always conveniently installed on the high point, provided the elevation of this point is sufficiently above that of all the buildings to give an adequate pressure.

Elevated tanks and stand-pipes are mainly objected to on account of their appearance, and the danger due to leakage or bursting by frost or on account of poor materials. Plain towers, tanks and stand-pipes are ugly when placed close to and in plain view of the main buildings; they may be improved in appearance by numerous devices and architectural treatment, but such ornamentation is generally expensive.

The system of supplying water under air pressure has come into vogue in recent years and concerns have sprung up everywhere advertising their system, all claiming points of preference over their competitors, and nearly selling these manufacturers under certain trade names. In justice to all, it may be stated that neither the most nor the least advertised, with very few exceptions, can lay claim to patented fundamental principles.

In a general way, a compressed air system of water supply consists of one or more air and water-tight steel tanks, filled partly with water and partly with air under pressure. The latter is supplied ordinarily by means of an air compressor connected with the electric motor or engine.

The compressed air forces the water from the tanks to the faucets, gradually expanding until nearly all the water has been driven out, when it becomes necessary to recharge the tanks with water, by which operation the air is again compressed.

From this general type there is only one variation which makes use of separate tanks for water and air and has the advantage of absolutely controlling and maintaining constant water pressure at the faucets. This type is covered by patents. Compressed air systems, using electric motors as power generators, are frequently made automatic in operation and require very little attention.

The amount of pressure which should be available in a well-designed water system should be sufficient to supply one or more effective fire streams, and ample storage should be provided for this purpose.

Fire protection for isolated buildings is of extreme importance and should never be entirely neglected, even though the original cost of installation is somewhat high. Provision should also be made for properly distributed sprinklers in the lawn, vegetable and formal gardens, and particular care should be exercised in providing pipes of sufficient diameter, especially for fire hydrants or lawn sprinklers, since a great deal of pressure is lost by friction in small pipes and in rubber hose attached to these fixtures.

LIFE OF PIPE COVERING.

Under the subject of pipe covering in Leland's work on "Boiler Accessories" the following extract appears:

It has generally been the impression that it is not economical to cover a pipe to more than 1 in. in thickness. This will depend upon the cost of the covering and the time it is likely to last. If it does not last more than five years, 1 in. is probably the most economical thickness; but if the life of the covering is likely to be 10 years or more, a second inch in thickness can be applied to advantage. For instance in tests which have been made, in the case of "Nonpareil cork," increasing the thickness from 1 to 2 in. raised the cost from $25 to $30 per 100 sq. ft., and increased the net saving in five years by $10, and by $30 in 10 years. A third inch of covering did not produce saving enough to pay for its cost. In each case with the asbestos fireboard, a second inch in thickness showed a saving of $20 in 10 years, while the third inch showed an actual loss from the dollars and cents point of view. It would be well to remark that it is of great importance that the pipe covering should be kept in repair for a loose fitting covering is of little value.

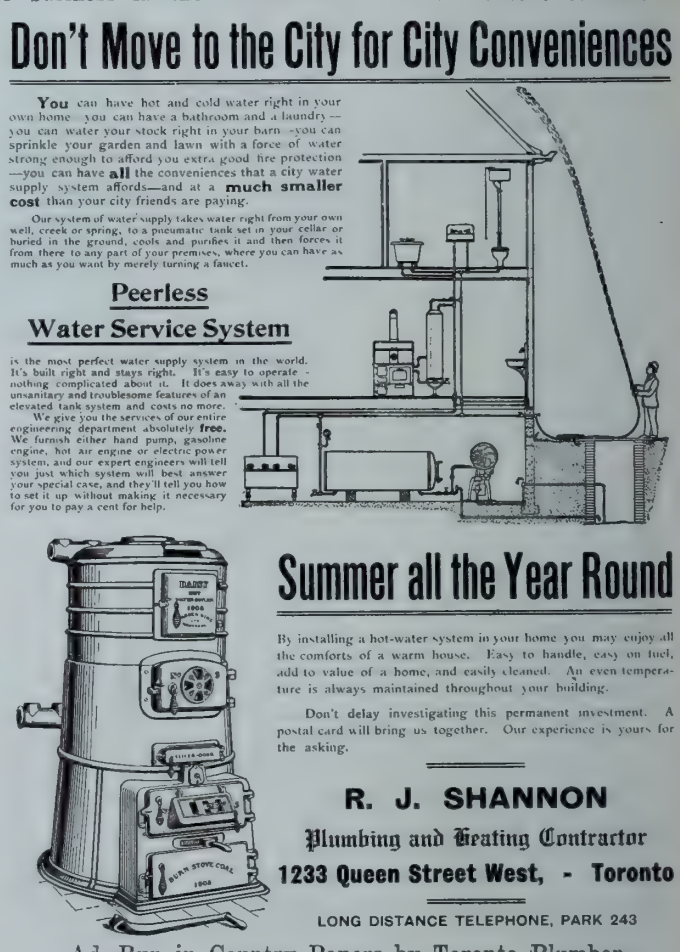
HEATING THE HOME.

A strikingly attractive booklet under the title "Heating the Home," has just been issued for this season by The Gurney Foundry Co., Toronto. It contains a talk on the modern method of heating from a general viewpoint, and describes in detail the heating of the hall, parlor, dining-room living-room, bedroom, bathroom, and in fact all parts of the house. A series of four questions is put to the home owner: What is the most comfortable and hygienic kind of heat he can have; just how convenient is it going to be for him to run; what is going to be the cost of up-keep; and how are the claims of the manufacturer backed by the opinion of intelligent people? These questions are answered in detail, showing that hot-water heating is the best kind of heat, and that the Gurney-Oxford system is an excellent one; it is also the most convenient system; is economical in fuel and free from necessity of repair; and the opinion of the home owner's neighbors is the quarantee that the Gurney Co.'s claims are all that they represented. The booklet is splendidly illustrated and printed.

CITY PLUMBER AND FARM JOBS

The accompanying illustration shows how R. J. Shannon, master plumber, Toronto, is getting after business in the suburban towns near Toronto. The cut is a copy of a three column ad. run in several country villages from twenty to thirty miles outside Toronto.

Mr. Shannon has been very successful in securing contracts for installing hot water and plumbing jobs in country houses near Oakville and Streetsville and in the present state of the trade in Toronto, with competing master plumbers taking work at prices barely covering the cost of labor and material, he is acting wisely in reaching out for suburban business. He is, of course, aided in his advertising by securing cuts to illustrate his ads. from the firms he buys his supplies from, the National Equipment Co., and the King Radiator Co., Toronto. Any supply house will be glad to assist in this manner.


Don't Move to the City for City Conveniences
You can have hot and cold water right in your own home—you can have a bathroom and a laundry—you can water your stock right in your barn—you can sprinkle your garden and lawn with a force of water strong enough to afford you extra good fire protection—you can have all the conveniences that a city water supply system affords—and at a much smaller cost than your city friends are paying.
Our system of water supply takes water right from your own well, creek or spring, to a pneumatic tank set in your cellar or buried in the ground, cools and purifies it and then forces it from there to any part of your premises, where you can have as much as you want by merely turning a faucet.
Peerless
Water Service System
is the most perfect water supply system in the world. It's built right and stays right. It's easy to operate—nothing complicated about it. It does away with all the unsanitary and troublesome features of an elevated tank system and costs no more.
We give you the services of our entire engineering department absolutely free. We furnish either hand pump, gasoline engine, hot air engine or electric power system, and our expert engineers will tell you just which system will best answer your special case, and they'll tell you how to set it up without making it necessary for you to pay a cent for help.
Summer all the Year Round
By installing a hot-water system in your home you may enjoy all the comforts of a warm house. Easy to handle, easy on fuel, add to value of a home, and easily cleaned. An even temperature is always maintained throughout your building.
Don't delay investigating this permanent investment. A postal card will bring us together. Our experience is yours for the asking.
R. J. SHANNON
Plumbing and Heating Contractor
1233 Queen Street West, - Toronto
LONG DISTANCE TELEPHONE, PARK 243
Ad. Run in Country Papers by Toronto Plumber.

Mr. Shannon went into business for himself three years ago having formerly worked for Robert Ross, former president of the National Master Plumbers' Association. At the recent convention at Montreal, he was himself elected vice-president for Ontario in the National M.P.A. He employs about a dozen men the year round.

High Pressure Connections for Steam Heating

J. F. Bennett, in the Plumbers' Trade Journal, Discusses the Instalation of Steam Heating Systems and the Pressure Radiators Can Carry.

Generally speaking, heating work nowadays is usually in the form of one, or two-pipe, low pressure gravity return systems, or what is known as the vacuum-vapor systems. Occasionally, however, high pressure work, or steam circulation under high pressure, is required.

Just what really constitutes high pressure is a question about which

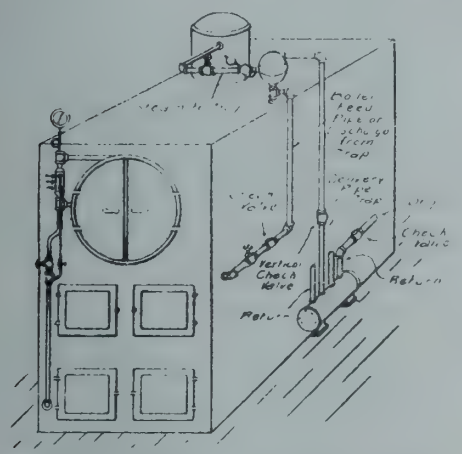


Fig. 1. Condensation Return to Boiler Through Receiver and Return Trap.

many fitters disagree. The ordinary low pressure gage registers only 30 pounds, consequently it is customary to call a pressure in excess of 30 pounds, above the atmosphere, high pressure.

Low pressure gravity return systems are usually designed with a sufficient quantity of radiation to heat a building at from one to five pounds' pressure.

The temperature of steam increases, according to the increase in pressure, approximately as follows :

Pounds.	Temperature.
1	212 degrees
5	228 "
10	240 "
25	267 "
50	295 "
75	320 "
100	337 "

Obviously, a 100 square foot radiator at 100 pounds pressure, will emit more heat than will a radiator of the same size at one pound pressure. Thus, where the question of space for radiation enters into consideration, a building may be heated by less radiating surface under high pressure, than under low pressure.

Again : The radiator connections and general piping for high pressure may be of much smaller sizes than the piping for low pressure. The best practice on high pressure work is the two-pipe system, feed and return. It should also be borne in mind that ordinary cast iron radiators are not built nor designed for high pressure, and in ordering radiators it will be advisable to mention the pressure they are intended to carry. The best radiators for high pressure are the tubular pipe radiators, or radiators made of vertical rows of wrought iron pipes, rising from a cast iron base, each two pipes being connected at the top by return bends. Circulation coils, or box coils, are also well adapted for high pressure work, as they will withstand a higher pressure than cast iron radiators will stand.

Most of a steam fitter's work on high pressure heating is in factories, such as mills, woodworking establishments, textile manufactories, and other places where drying rooms are used. Most driers are designed with the intention of getting the greatest possible heat out of the heating coils in the shortest space of time. Sometimes with this object in view, the fan, or blower system, is used under high pressure. Should a pump be used for returning the condensation to the boilers, the returns are connected to a receiving tank from which the condensation is pumped into the boiler.

Sometimes a return trap is used to deliver the condensation to the boiler. The returns in this case are carried to a receiver which is connected to a return trap, set from two to three feet above the water line of the boiler. Figure 1 shows a Curtis return trap, by way of illustrating the way the return return trap is used. Other forms of return traps, such as the "Bundy," perform the same service.

When the returns come back below the boiler level, two traps are sometimes used ; one on the floor and another above the boiler. The lower trap delivers the condensation from the receiver to the upper trap, which, in turn, delivers it to the boiler. The return trap is a satisfactory method of delivering condensation to a boiler, as the trap will deliver the condensation to the boiler at a much higher temperature than a pump will deliver it.

All up-to-date plants provide for automatic water regulation, and there are many and various devices on the market for this purpose. The Vigilant feed water regulator will do for an illustration. This regulator is set so that the bottom of the regulator chamber is from eight to ten inches above the second or middle gage cock in the water column. A 1¼-inch pipe is connected from the bottom of the chamber to a point below the water line of the boiler. This has a special valve, by means of which the regulator may, if desired, be cut off from the boiler. This valve has an opening on the bottom, from which a drain pipe, with a valve attached, should be run to drain the chamber. The drip from the exhaust valve may be connected to the drain pipe below the drain valve.

The second or middle gage cock is taken off the water column, and in its place is screwed a special angle valve A, Fig. 3, which is connected to air valve on top of the regulator chamber. A ¼-inch steam connection is run from

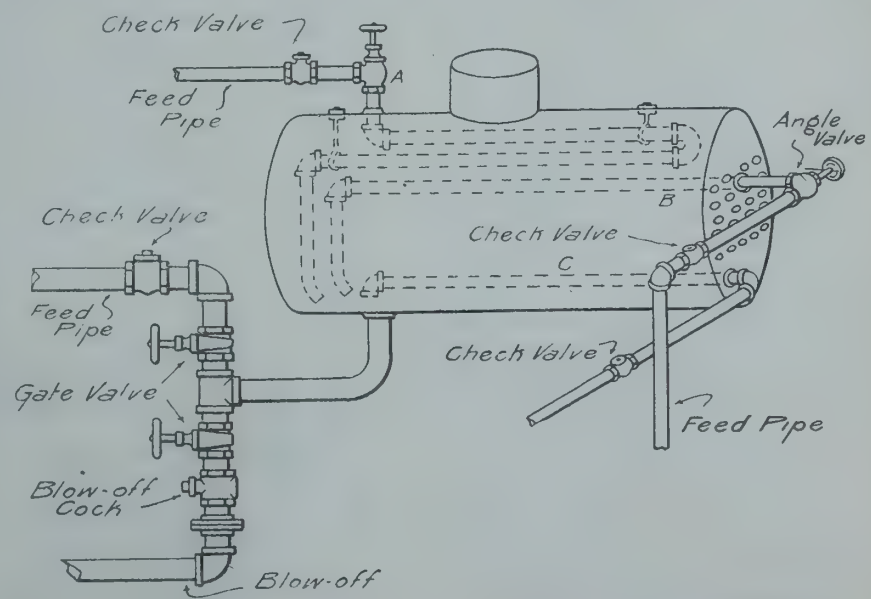


Fig. 2.—Four Methods of Connecting Boiler Feed Pipes to Horizontal Tubular Boiler.

some convenient point to steam connection at B. A ¼-inch pipe is connected from the pressure and exhaust valve at C on the regulator, to the top of the controller valve on the feed line. This controller should—if practicable—be placed below the regulator, to insure a

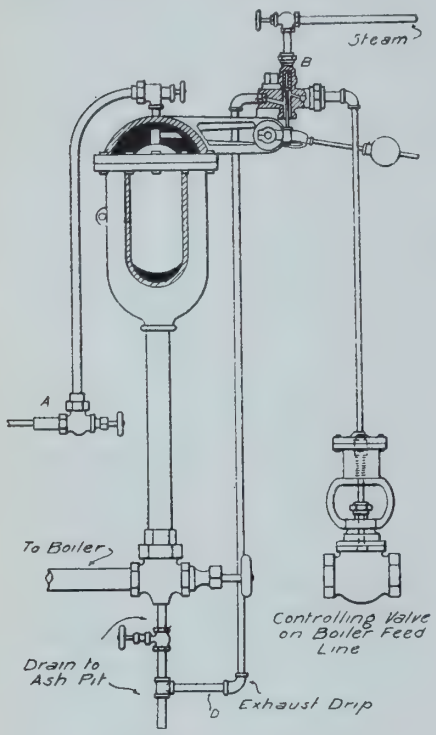


Fig. 3.—Sectional View of Vigilant Feed Water Regulator.

supply of water over the rubber diaphragm. Should it not be feasible to place the controlling valve in this manner, the ¼-inch pipe should be trapped with a U trap bent in the pipe. From the exhaust valve at D a vent, or drain pipe, is connected into the drain pipe below the drain valve, as shown at D.

When the water reaches the opening of the special angle valve (A) in the water column, shutting off the steam, the chamber will fill with water from the boiler, thus reducing the weight of the displacement body by the amount of displacement. The weighted lever will now fall, allowing the exhaust valve to close and the pressure valve to open, permitting the pressure to act on the diaphragm of the controlling valve, closing it, and stopping the feed.

When the water falls and exposes the mouth of the special angle valve to the steam, the water in the regulator chamber will be thrown into balance, and the displacement body will resume its lowest position. The rocker arm will be brought into contact with the stem of the valve, opening the exhaust and closing the pressure, relieving the diaphragm and permitting the controlling valve to open and start the feed. The chamber of regulator has to be vented through valve on top of chamber once in twenty-four hours, in case of accumulated air in the chamber of the regulator.

On the steam line to the pump a diaphragm regulating valve, or pump governor, is placed with a ¼-inch connection from the diaphragm to the feed pipe, Fig. 4. The counter-weight on this governing valve is adjusted to maintain a pressure of from 10 to 15 pounds more in the feed line than in the live steam line to the pump. This is as nearly perfect automatic feed pump control as the writer ever saw, and the writer (who has no interest in the regulator, or knowledge of the people who control it) has had opportunities of seeing it operating under different conditions in several plants.

There are various methods of connecting feed pipes to high pressure boilers depending, of course, on the style or the type of boiler. In the Stirling water tube boiler, the feed enters through the top of the rear drum, at the top of the boiler, below the water line. In the Babcock and Wilcox water tube boilers, the feed generally enters the front of the steam drums above the tubes and at a point below the water line of the boilers.

On tubular boilers the feed is sometimes delivered through the blow-off pipe, though this method is questionable, as the feed water, instead of tending to keep the blow-off pipe clean, often causes it to become coated with sediment far worse than if the pipe was used for blow-off purposes only. This is possibly due to the fact that the blow-off pipe from a tubular boiler is generally exposed to intense heat in the combustion chamber, after the heat of the fire, or hot gases, passes the bridge wall before entering into the tubes, or flues. Tne horizontal tubular boiler is meant in this connection.

Another method is to run the feed pipe throubh the top of the shell of the boiler at a point near the back, and to carry it nearly to the front end, from which point it returns to the back end, dropping to below the water line, over the blow-off opening, as in (A) Fig. 2.

Again, the feed pipe may be carried through the front head as in B, dropping below water line at the back or the rear end, of the boiler. Or it may be taken through the front head, at a point six or eight inches above the bottom of the shell, and carried directly to the back, discharging as near to the blow-off opening as possible. In all cases the pipe inside of the boiler shell is supposed to heat the feed water before it enters the water being used in the boiler.

Cyril Henderson, bookkeeper for T. A. Cowan, master plumber, Brantford, is doing some live advertising. Just after Peary returned from the North Pole Cowan's ad. contained a picture of the pole surmounted with a student's lamp and surrounded with ice bergs, the picture being accompanied by a wireless message from Peary saying he had found one of Cowan's lights on top of the Pole.

A. D. McArthur and F. Sommerville, Toronto, are directors in W. D. Beath & Son, Toronto, a company organized with $100,000 capital to make carrier systems.

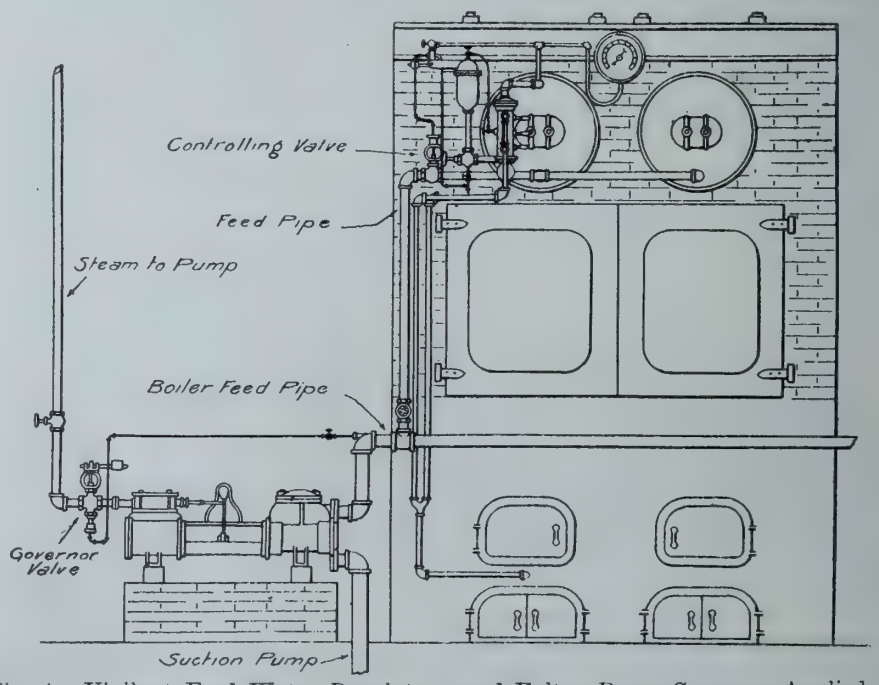


Fig. 4.—Vigilant Feed Water Regulator and Fulton Pump Governor Applied to Horizontal Water Tube Boiler.

HOW TO REPAIR CLOSET FLUSH TANKS.

A correspondent in the Metal Worker gives some practical suggestions as to how to overcome common complaints in the workings of closet tanks and bowls.

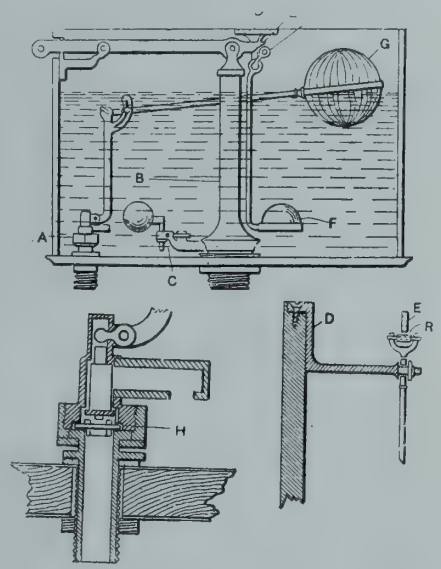
Not every plumber is a success in the matter of repairing closet flush tanks, and few things in the business cause the plumber more trouble than these same boxes of tricks that seem to be almost always in need of repairs. One reason for this state of affairs is that many people are after the cheapest thing they can buy that will answer the purpose, and also there are combinations made to look like a piano and to last two months, with a lining of 8-oz. copper, and a cheap brass mixture that cannot last but a short time.

For the benefit of some of the younger boys, suppose you come with us as we go to repair one of these flush tanks. They are known as high up or low down, and as their name implies they occupy that position with reference to the bowl. The low down type seems to be very popular in most places, for one reason they were thought to be less noisy than the other, which is not always the case, but in some places where there is not much head room they can be used to advantage. In order to equalize the power of the flush due to the lack of hight, the size of the flush is increased from 1½ to 2 inches.

In the sketch herewith is shown the interior construction of one in general use in some sections of the country. There are many different combinations, of course, and you will be sure to meet new ones, but common to all will be these three things: 1. A ball cock—namely an automatic valve to admit water. 2. A flush valve to empty the contents rapidly and equally at every flush. 3. Some contrivance to refill or replenish the water seal of the trap in the bowl, lost by the rush of water through it during discharge.

The tank shown here has for a ball cock the bottom supply A, which we will say more about later on. The flush valve B is a tube 1¾ inches diameter, open at the top to act as an overflow, and having a rubber ring at the bottom to make a water tight joint and guides to bring it always to an even bearing in its cup seat. The refill contrivance is shown here in connection with the flush valve in the form of a small flap valve, C, controlled by a float about 2½ inches in diameter, connected by an adjustable arm to admit of its closing quickly or otherwise.

In order that an ample flush shall be given at all times without any effort on the part of the operator to gauge the amount by the length of time the pull is held an ingenious device is shown here to accomplish it. A bracket, D, on the top edge of the tank has a projecting arm carrying a brass rod, the top end of which is forked and provided with a small roller, R, and the lower end is bent at right angles to a float, F, within a few inches of the bottom of the tank. In operation this float when at rest keeps the position as shown, the little roller pressed against the end of the lever E. On the lever being pulled the lifting power of the float F forces the roller underneath the lever and there holds it and the flush valve B open until the water level drops below the float F, thus allowing the flush valve to drop shut, and



Details of Apparatus in Tank.

valve C to open for the refill. During this time the large float G has been sinking with the water level and is now admitting water again. The float of valve C must be adjusted to give enough water to properly reseal the trap in the bowl before closing, which it is first to do.

A common complaint is that the water runs continuously through the bowl, and in the summer months this is very bad, not only on account of waste of water, but because of the sweating of all the piping leading to it. This is due to a leaking of either the ball cock or the flush valve, which is manifest as soon as you have removed the cover of the tank, for if the tank is overflowing it shows at once that the flush valve is tight and the ball cock is leaking, whereas if the tank be only part full and the water pouring in just raise the ball cock gently, and the chances are that it will close all right and the balance of the water will leave the tank.

Examine the float of the valve C. If it has become leaky and partly filled with water it will allow the valve to remain open and prevent the tank from filling. Occasionally the rubber ring on the flush B will need renewal—not very often. If the ball cock allows water to enter when the float is held up it will be necessary to take it apart. This is a point where the plumber must use good judgment. He may save time by taking it out of the tank, or he may fix it more quickly by taking it apart in the tank, but where ball cocks are located at the bottom of the tank, as shown here, they are hard to get at. Some fellows make a great mistake here by not carefully removing all the water from the tank before removing the ball cock, to prevent it spilling all over the floor. This style is shown in section in Fig. 2, and is easy of access, as it can be taken apart in the tank by using a suitable wrench to uncouple the union. This exposes the valve disk H, which has a double seat, and all that is necessary is to turn it upside down, bringing a new surface to wear, or if this has been done before a new disk can be bought for a small sum. In replacing the valve, wipe the surfaces clean and dry and paint the spot where it passes through the tank. Another complaint is that the water for flushing stops when the pull is let go, instead of emptying the tank as it should. This is almost always due to the filling of the float F, which prevents the flush valve B from working, through not being held up. On one tank that had been in use a long time the screws holding the support D were loose, which allowed it to fall away enough to let the roller miss the lever. There may be other reasons for the failure to work properly, but these are the chief one.

GASOLENE TORCHES.

Catalogue No. 15 has been issued by Otto Bernz, 21 South 13th Street, Newark, N.J., illustrating gasolene and oil torches for tinners' and plumbers' use. It also shows other lines of plumbers' specialties, such as metal pots and wrought iron ladles, the concern making these along with closet screws, bolts and washers, sewer cleaners, etc. Those using this class of goods will do well to secure the new catalogue.

In towns where difficulty is found in enforcing sanitation ordinances, the health inspector will find the work greatly facilitated by the use of the camera. It is difficult to combat the evidence secured by this means.

TALES OF THE TRADE

BASEBALL AND CHEWING GUM.

A. L. Macdonald, vice-president of Macdonald & Sons, Montreal, of the Standard Ideal Co., and the Toledo & Jardine Tools, is a very popular member of the supply fraternity. During the recent plumbers' convention in Montreal, he was an energetic member of the entertainment committee, and owing to his mighty baseball arm he supplied a large company at Dominion Park with chewing gum from a ball throwing gal-

A. L. MACDONALD, MONTREAL.

lery. While his pitching ability may not be a sign of a mis-spent youth, it is evident that his school hours must have to some extent been encroached upon.

"A. L." has had years of experience in the manufacture of boilers and radiators, and few know more than he about these subjects. An article he wrote some time back in The Plumber and Steamfitter, caused a great deal of comment, it sugesting the advisability of the boiler manufacturer of Canada making a round boiler for house heating purposes to burn soft coal, one manufacturer coming back with the rejoinder that they had been making a boiler for many years that would burn soft coal with just as good results as the present hard coal boilers, a statement which Mr. Macdonald considered a good joke. Mr. Macdonald, who was born in Detroit, has had in his varied training in the States a thorough schooling in the manufacture of boilers and in the science of radiation. He has passed through the factory end of the business, and sent years with a firm who appropriate large sums of money annually for experimental purposes. Mr. Macdonald, therefore, had exceptional opportunities to test every competitive boiler in the market, an opportunity that is not afforded many.

A. L. has become in four years, a great admirer of Canadian manufactures in all lines, and is as keen on promoting the interest of the Dominion in every direction, as the native-born Canadian.

SQUARE PEG IN ROUND HOLE.

George Cooper, Toronto, during the master plumbers' convention at Montreal, was accosted by a young fellow, who asked how things were in the plumbing trade in Toronto, saying he thought of moving to Toronto and going into business for himself.

"I am a Liberal in politics and an honest workman," he added.

"If you are on honest plumber," George replied, "you will have very little competition, the way things are going in Toronto, and if you are a Liberal the game laws will protect you."

FIFTY PER CENT. DISCOUNT.

A certain salesman calling upon the plumbing and heating trade in Canada is inclined to be boastful regarding the amount of sales he makes. Not long ago he met Tom Carlind, of the Pittsburg Valve & Fittings Co., and after passing the time of day, said he had just come from Hamilton, where he said he had done a tremendous business, "How much do you think I sold?" he asked Tom.

"How should I know?" replied Carlind.

"Of course, you don't know, but what do you guess?"

"Oh, about half."

"Half of what?"

"Why half of what you say."

BEWARE OF THIS "FAKIR."

A correspondent from a town in Eastern Ontario asks The Plumber and Steamfitter to warn the plumbing and heating trade of a "fakir" who is going through the country trying to do the trade. His letter without names is as follows:—

"A few days ago, a stranger, with a Hebrew-German accent, called in our store, and asked for the boss. He represented that he was a well-to-do farmer, who was building a new house about ten miles out on such a road, and that Charley Bell, a well-known carpenter, was doing the work. He (Bell) recommended him to come to us for hot water heating and plumbing, for an up-to-date house. He wanted us to go out next day and size-up the job and name our price, as he wanted us to do it. He also picked out a gas range (the best we had); and took a cut of same to show the "old woman." He had, or drew, a rough sketch of the house, showing bath room, etc.

"He had sold some fat cattle to the butcher on the corner, to be delivered in two days, and was also to sell a lot of hogs next week. He was just going over to the sawmill to pay for the lumber. Returning a short time later, he said the lumber cost more than he expected, leaving him with hardly enough to buy the beer for both (which I declined). He asked a favor of $5 till to-morrow, "when you come up."

"I found on investigation that there was no such man, farm, or new house, and a few days later, while sitting in an office waiting for another merchant to serve a customer, I heard a voice that sounded familiar and heard the same old story, under a different name. I

AT THE MONTREAL CONVENTION.

Jack Carlind (Lunkenheimer Co.), Tom Carlind (Pittsburg Valve & Fittings Co.), and Jack Wilson (King Radiator Co.), Sitting With Their Backs to Montreal.

heard the merchant make arrangements to go next day. The man then picked out a kitchen range. I could not control myself longer, but went down in the store and denounced him as a fraud, and seizing hold of him said I would have him arrested as such. As soon as he realized who I was he bolted for the door, taking me with him, but he got away without me. Of course, I should have laid a trap for him and had him arrested, but could not control my feelings longer.

"He puts up the best story of any "fakir" I have run across. I would like the trade warned so that they may be on the lookout and have him caught."

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Findleton & Russell, plumbers, Montreal, have dissolved.

A demand of assignment has been made on Ouellette & Forget, plumbers, Montreal.

Some of the St. Thomas aldermen are agitating for the appointment of a civic plumbing inspector.

Montreal's drinking water is declared to be absolutely dirty, and the water at Perth, N.B., is said to be more like sewage.

The Robertson-Godson Co., Vancouver, wholesale hardware and plumbers' supplies, will erect a brick warehouse to cost $35,000.

The tender of the Barnes Hardware Co., for installing the plumbing and heating at the Port Arthur car barns was accepted at $2,222.

C. A. Lusby, secretary-treasurer of the Amherst Foundry Co., Amherst, N.S., spent a week in Toronto, in company with Mrs. Lusby, recently.

The contract for the plumbing and heating in the $60,000 addition to St. Anne's convent Victoria, has been secured by the Colbert Plumbing Co.

L. L. Anthes, of Anthes Foundry, Toronto, leaves this week on a month's business and shooting expedition which will take him as far west as Edmonton.

Elliott Bros., Kingston, have just completed the work at the Royal Military College there, of putting in new water mains, and erection of a tank 115 feet high.

The Western Plumbing Co., Lethbridge, at $4,595 have the contract for instaling a Waldron heating and ventilating system in the Claresholm, Alta., public school.

The St. Catharines Brass Works, compossed of J. E. Riffer and W. S. McIntyre, have opened a foundry capable of turning out castings of brass, bronze, copper and aluminum.

Wm. H. Walford, of the Standard Sanitary Mfg. Co., Toronto, has been promoted to be buyer for that concern, and Harry Dunn will succeed him in looking after the sales orders.

Peden & McLaren, Montreal, have awarded the contract for the instalation of electric fixtures in the new building at Saskatoon for the Bank of Montreal, to the Jenkins' Bros. Brass Co., Montreal.

At a recent meeting of the Lethbridge City Council, the waterworks committee recommended that the office of plumbing and sanitary inspector be combined, and that an addition of $10 per month be made to the present salary.

Among the contracts secured by D. Sinclair, Paris, is the metal work and steam heating in the Watson Mill, Brantford, the galvanized iron work for the Sanderson-Harold Co., and 13 metal ceilings in the new Paris public school.

The Toronto Board of Control have awarded contracts for the proposed addition to the House of Industry. The plumbing will be done by Keith & Fitzsimmons at $1,140; and heating, Toronto Furnace & Crematory Co., $2,919.

The Peerless Heater Co., Toronto; capital, $40,000; has been incorporated to manufacture and sell boilers and hot water heaters. Incorporators, A. Dods, G. Grant and R. P. Stockton, Toronto.

The contract for roofing, galvanized iron, plumbing, gas, electricity, ventilation and heating, in connection with the erection of the Meilleur School at Montreal, has been awarded to T. Lessard & Sons.

Plans for the construction of one of three public baths to be erected at Montreal, with heating apparatus for the winter months have been accepted by the Hygiene Committee. The bath in question will be erected on Delorimier Avenue, near St. Catherine Street, at a cost of $30,000.

William Ayling, a plumber's helper in the employ of the Purdy, Mansell Co., Toronto, was saved from death while working on the new building of the Canadian Kodak Co., by the bravery of James Sheather, a teamster, grasping a huge bucket, which was falling on the boy, Sheather himself losing a couple of fingers in so doing.

Watt & Sons, plumbers, Chatham, report an unique experience in instaling waterworks systems at the lake, where they have been putting in quite a few pneumatic systems. Following a failure of the water supply, the strong pumping has brought, in several cases, a flow of natural gas, which started with a presure of 80 or 90 pounds, and has been steadily increasing. Unlike the natural gas in use in that city, it is entirely without odor.

TORONTO'S NEW PUBLIC LAVATORY.

It will be remembered that during the spring months Plumber and Steamfitter published illustrated articles on the existing conveniences in Toronto, and editorially sugested the need of more of them. The civic authorities thought three new station were necessary, afterwards cutting this estimate down to two, because of lack of sympathy by members of the council.

The new station will be an underground one, and will be fitted up for the accommodation of both men and women, separate entrances for each sex being provided. The convenience will be entirely underground and will be located immediately south of Queen Street, the stairway entrances being just inside the sidewalk.

The blue prints while in general following the lines of existing stations, show a number of improvements. There will be a fresh air inlet and a foul air outlet, each being placed in a lamp pillar at either entrance. Cement will be used extensively in the construction, and double walls with vents will allow of warmed fresh air entering the chambers and forcing out the foul air through suction tubes, the foul air being smoked before escaping. All the air will be entirely changed every five minutes.

In the men's compartment will be seven urinals, six closets and one lavatory, while the women's chamber will contain four closets and 2 wash basins. A bubble drinking fountain will be located at the bottom of each stairway. It is proposed to set apart one closet compartment in each chamber for the use of paying visitors. For five cents these compartments will ensure privacy and allow the use of a separate lavatory with soap and towel. All the furnishings will be entirely of porcelain, except that the lavatories in the pay sections will have marble tops. The closets will be separated by marble partitions. The stairways, and wherever there is water contact, will be lined with tiled brick, and the interiors will have enamelled brick walls. There will be a vitrious floor, so constructed that it will be dry at all times.

The station will have no light wells, as the officials state that the wells in existing stations have not proven satisfactory. The chambers will be lighted exclusively by electricity, and the heating will be done by either steam or hot water. There will be rooms for the attendants, besides storage rooms, and a heating chamber. The walks above ground will be of concrete, and the metal work and trimmings will be an ornamental character.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Public Buildings.

A $25,000 school is proposed to be built at Guelph.

The North Ward of Lethbridge is to have a fire hall at once.

A new Methodist church is proposed to be built at Kamploops, B. C.

The erection of a large railway station at St. John is being considered.

St. Thomas is making an effort to secure a Provincial technical school.

Tenders are called for the erection of a public library building for Orillia.

Plans have been prepared for the new branch post office to be erected at Montreal.

Tenders are being called for the erection of a building for the trustees of the Nelson Y. M. C. A.

A new pathological building for the Montreal General Hospital will be erected at a cost of $50,000.

Ground has been broken at Toronto for the new museum in connection with the University of Toronto.

The Board of Education has been granted $10,000 for alterations to the Central school at Collingwood.

Three new Salvation Army halls are to be built at Vancouver just as soon as the necessary money can be found.

A $16,000 separate school will be built in the north-western part of Toronto; and a $14,000 school in East Toronto.

The contract for the construction of the Masonic Temple at Prince Albert has been let to A. Anderson, at $60,000.

The plans prepared by H. S. Griffith, Vancouver, have been accepted for the new Y. M. C. A. building in Victoria.

A by-law to raise $25,000 for the erection of a new school building will be submitted to the Meaford ratepayers.

Salvation Army citadels are proposed for the north and west ends of Winnipeg, which will cost in the neighborhood of $15,000.

Work has commenced on the fisheries building being erected at the Queen's Park, New Westminster, for use at the exhibition.

Work has been begun in the erection of the new $16,000 Church Club, in connection with the Dunn Avenue Presbyterian Church, Toronto.

The new Salvation Army citadel at Calgary, which is to be one of the best structures of its kind in western Canada, will cost about $12,000.

David Ewart, chief architect for the Dominion Government, is engaged in the preparation of plans for the proposed new departmental block at Ottawa.

J. Rawson Gardiner has awarded the contract for the new Sunday school and chancel for St. Simon's church at Montreal, to Mills & Cole. Cost estimated at about $5,000.

The Owen Sound Hospital Board is taking steps towards the beginning of the construction of the new wing to the G. & M. Hospital. Plans are now under preparation.

The Ontario Government has decided upon a thorough and comprehensive reconstruction of the Provincial Parliament buildings, the work to be proceeded with immediately.

General Superintendent Brown, of the Great Northern Railway, made the definite statement that the company would build a new depot at New Westminster next year.

The new advisory board of St. Andrew's Cathedral, Victoria, have decided to effect improvements and additions to Institute hall, which will involve an expenditure of $25,000.

Plans for the new Fort William union depot have reached that city and contractors there are now figuring on them preparing to put in tenders for the work of erecting the structure.

The new hospital, to be erected in Grand Forks by Dr. C. M. Kingston, is to be of cement blocks, the contract for the manufacture of which was let this week to Lutley & Gallipeau.

Contracts have been awarded to McGrath & Crowley for the erection of a fine new wing to the Hotel Dieu hospital, Kingston, and work will begin at once on its construction. The new building will cost $40,000.

A building permit was granted to the Jesuit Fathers for the erection of a new church at Montreal. The new structure is to cost in the vicinity of $40,000, and building operations will be commenced as soon as material can be obtained.

The Toronto Board of Control having approved of the site purchased by the Board of Education for the new Northwest High School, the work of building will go on at once. Excavations will be begun this fall, and by the opening of the fall term next year, a new $150,000 High School building will be ready for occupancy.

Work has been started on the excavations for the foundation of the first permanent building for the new asylum to be built in Coquitlam, B.C., near Westminster Junction. The building will be an exceptionally large one, and will cost nearly $400,000, and will accommodate 600 patients. Five other buildings in all will be added later, but they may not be completed for some years.

Tenders for the building at Toronto, of the new Parkdale Public School, were opened and the following awards made: Masonry, H. Needham, $24,800; carpentry, Crocker & Le Drew, $13,500; plastering, T. Blackburn & Sons, $3,700; painting, J. Phinnemore, $1,525; plumbing, Fred Armstrong Co., $1,880; roof and tinsmithing, A. B. Ormsby & Co., $1,807; heating and ventilation, J. R. Seager, $3,625; heat regulating, Johnston Temperature Regulating Co., $695.

Municipal Undertakings.

A storm sewer system is proposed for London.

A $17,000 waterworks system is suggested for Carlyle, Sask.

Excavation work has been commenced on Cobalt's waterworks system.

Nanaimo ratepayers approved of the waterworks by-laws recently voted on there.

The Township of York intends to construct a sewerage system at a cost of $7,500.

A by-law to raise $5,000 for waterworks extension will be voted on by Galt ratepapers on October 16.

If Barton Township is annexed to Hamilton, that city will spend $125,000 this winter on sewers in the east end.

New Westminster's waterworks intake pipe will be enlarged to supply Coquitlam and Port Moody with water.

The contract for excavation for water mains in St. John, N.B., was awarded to Robert Short and Peter Arsenault.

Summerland, B.C., council proposes to buy the domestic and irrigation water systems of the Summerland Development Co.

Wells & Emmerson received the contract for 3,500 feet of 20-inch spiral rivetted pipe for Port Arthur's waterworks intake pipe.

The proposed water systems, to embrace the municipalities of Burnaby, South Vancouver and Point Grey, is estimated to cost $500,000.

The Ottawa city council recently passed a by-law sanctioning the purchase of a site at the east end of the city for a civic incinerator plant.

Tenders were recently opened for the construction of a sewer on 8th Avenue, Rosemount, Montreal. The contract was awarded to Mr. Dennis, $9,982.

Toronto's city engineer advises that a number of new water mains are necessary for domestic purposes and for fire protection in the newer sections of that city.

City Engineer Ker recommends to the Ottawa Water Committee the establishment of a reservoir with a capacity of 30,000,000 gallons. The cost of the work is estimated at $150,000.

The Toronto Board of Control recently awarded contracts as follows: Sewers—Emerson Avenue, McKnight Co., $1,940; Davenport road, Godson Co., $44,380; Humberside Avenue, Maguire Co., $41; Keele St., Excelsior Co., $300.

At a recent meeting of Coldwater ratepayers it was resolved that the council be asked to have a by-law submitted to the people to decide whether

the village will instal a system of fire protection alone, at an approximate cost of $10,000, or a complete waterworks system at an approximate cost of $29,000.

Saskatoon citizens recently voted $17,450 for the extension of the waterworks system in certain portions of that city. These extensions are to be made in addition to the programme of extensions mapped out earlier in the year, and now partially completed. Many applications for sewer and water connections to private houses and other buildings are now on file at the city offices. So numerous are they that it will be impossible to fill all the requests this year.

General Building Notes.

A new $40,000 hotel will be erected at Sherbrooke.

Albert Morrow will erect a modern residence at Toronto.

The Royal Alexandra Hotel, Winnipeg, will be enlarged.

A big hotel to cost $1,500,000 is being promoted at Toronto.

A. A. Gilroy will erect a fine residence at Winnipeg next spring.

M. H. Robertson will erect a four-storey building at Brantford.

H. L. Pratt intends building a new brick block at Niagara Falls.

C. E. Bailey will erect at Toronto, four detached dwellings to cost $9,600.

D. Lavine, Toronto, will build a row of dwellings at a cost of $16,000.

Vancouver labor men will form a company to build a labor temple there.

The Central City Mission purpose erecting a large building at Vancouver.

The Ontario Realty & Surburban Co. will build a $45,000 apartment house at Ottawa.

Building permits valued at $234,600 were issued at Toronto between October 1 and 6.

Plans are being prepared for a residence to be erected for R. B. Calverley at Outremont, Que..

Plans have been completed for the new Y. W. C. A., which is to be erected at Calgary, at a cost of $45,000.

Work on the proposed $175,000 office building of the Canada Life Assurance Co., at Vancouver, will be started this fall.

A building permit was recently granted to A. E. Carter, Vancouver, for a four-storey apartment house to cost $20,000.

The contract for the new telephone exchange building at Winnipeg, has been awarded to J. J. & J. M. Kelly, at about $43,000.

MacVicar & Heriot, architects, Montreal, have awarded to Thos. Wand the contract for the erection of three houses in Westmount.

The general contract for the erection of a building for St. George's Home, at Montreal, has been awarded to Geo. W. T. Nicholson.

A $90,000 six-storey brick block will be built by the Granville Loan & Building Co., Vancouver.

Mrs. M. I. Riordan, Toronto, will build a $10,000 residence; and R. Lankin, of the same place, will erect a row of dwellings to cost $12,800.

Permits have been issued to Major Audain for additions to residence on Foul Bay, Victoria, to cost $3,000, and to D. Hallam for residence to cost $4,000.

The Molsons Bank has purchased a site at Edmonton for the erection of a three-storey bank building, the construction of which will be started next year.

The contract has been awarded by the Temiskaming and Northern Ontario Railway commission to S. F. Whitham, of Toronto, for the erection of a new and enlarged passenger station at Cobalt.

A new annex will be added to the Montreal City Hall for the use of the police, Recorder's Court and Health Department. The cost of the new building will be in the neighborhood of $200,000.

T. J. Lightheart will build a $15,000 apartment house at Vancouver, and T. A. Tiedman took out a permit for a warehouse at the same place, to cost $15,000.

Immediately upon the close of the rainy season, work will be commenced upon the erection of a ten-storey steel and brick office structure adjoining the Woods Hotel, on Hastings Street, Vancouver.

Excavation work has begun on the foundations for a brick business block at Saskatoon, for F. M. McEown & Co., hardware merchants. The building will be a two-storey brick structure to cost about $5,000.

Tenders are being invited by Mitchell & Creighton, architects, Inglis Building, Montreal, for the plumbing, heating and electric wiring of an office building in Cobalt for Jacobs & Bilsky, contractors, Bishop Construction Co., Montreal.

Calgary and Edmonton capitalists, headed by J. Bailey Powell, will erect a three-storey stone business block at Kamloops. P. Burns & Co. will also erect a three storey business building at the same place.

The following building permits have been issued within the last few days at Ottawa: Tobin, Limited, concrete building, $6,000; W. P. Shannon, solid brick building, $10,000; Wm. Flegg, dwelling, $2,600; Andrew McArthur, dwelling, $3,500; J. C. Wilson, alterations to dwellings, $2,000; Jas. O. Cowan, dwelling, $4,500; John Hallam, warehouse, $8,000.

Recent building permits at Montreal include: Trust & Loan Co.'s new offices to cost $90,000. The builder will be M. Huberdeau. Jas. and C. D. Morgan, storage building, $15,000; P. Therbault, four buildings, eight dwellings and three stores, $12,000; B. Mitchell, dwelling, Fabrique Paroisse, dwelling, $6,500; M. Vezint, three dwellings, $4,000.

Tenders for the supplying of a heating system for the new Hotel Chateau Beauclene, in the Brooklyn Park Estate, are being received by the architects, Philip J. Turner, 121 Board Trade Building, Montreal.

At Westmount, Que., Quinlan & Robertson, contractors, Montreal, have been awarded the contract for the erection of a residence for Mr. A. W. Robertson. The contract for the erection of a semi-detached residence for Dr. F. W. Brown has been awarded to C. J. Brown. C. J. Brown has also been awarded the contract for the erection of a residence for R. N. King. Arthur Ahern will erect two houses and has awarded the contract to J. McEnroe, Montreal.

R. S. Williams & Sons's Co., have taken out a building permit for a warehouse at Winnipeg, to cost $16,000. Other permits issued are as follows: Robinson & Black, addition to store, $5,500; S. J. Woods, house, $1,500; T. Carter, house, $1,500; H. Milord, house, $6,000; E. Wolstenholme, house, $1,400; J. A. McKercher, alterations to Exchange Hotel, $1,000; A. O. Thorne, house, $2,400; A. Simpson, house $2,500; F. D. Burns, house, $4,500 Mrs. Inga Oystad, two houses, $3,000 each; Mrs. L. Clemens, $3,300; S. Blackwell, $3,000; S. A. Kennedy, $4,000; J. Sehneck, $2,000; J. H. Kolb, $2,500; H. Hirsh, $4,000; W. Hanbury, $4,000; Mrs. Sherwin, $3,600; R. Puls, $2,000, and M. McCan, $2,000.

The Robert Godson Co. will build a $35,000 warehouse at Vancouver, and Mr. Campbell will erect a $15,000 warehouse there, T. A. Tiedman will build a $10,000 store, and T. J. Lightheart a $15,000 residence. The Granville Building & Loan Co. will erect a business block to cost $90,000. Other building permits have been issued to R. C. Ferguson, frame dwelling, $2,000; J. F. Wilson, frame cottage, $1,000; Gillies Supply Co., frame warehouse, $3,000; A. E. Craighead, frame dwelling; Curries & Wallace, frame dwelling, $2,500; R. J. H. Baker, frame dwellings (2), $3,600; McLennan & McArthur, frame warehouse, $1,000; Brown & Morrison, frame dwelling, $2,000; Barber Matress, frame addition, $2,500; A. Matheson, frame dwelling, $1,800; William Anight, frame dwelling, $2,000; H. P. Newman, frame dwelling, $2,000; Mr. Mason, frame dwelling, $3,000; J. C. Turnbull, frame dwelling, $2,500; Charles Gordon, frame dwelling, $2,500; Geo. Field, frame dwelling, $2,000; Mrs. R. Evans, frame dwelling, $1,100; A. Doxon, frame dwelling, $1,100; H. Avery, frame dwelling, $1,200; R. Hudson, frame dwelling, $2,000; J. Sarrer, frame dwelling, $1,500; T. J. Lightheart, frame apartment, $15,000; T. A. Tiedman, brick store, $10,000; Tyson, frame dwellings (2), $2,000; Wm. Bennett, frame dwelling, $1,200; McMillan & King, frame dwelling, $2,-$5,600; A. Bleau, two stores, $2,500; 000.

PLUMBING AND HEATING MARKETS

MONTREAL.

October 15.—Supply houses report a very strong demand in all lines, and an increasing difficulty in obtaining delivery in soil and iron pipe, boilers and radiators, and enamelware. Manufacturers are working at full pressure, but the call is so heavy that they cannot keep up with it, and it is anticipated that not only will this state of things keep on until the end of the year but the delaying of contracts will make business good during the early months of the new year, a time when things are usually on the slack side. The difficulty of working up any stock during the winter is thus apparent, and it is likely that 1910 will see a much greater shortage.

The demand is not only good locally but at outside points, and users are clamoring for material. This was only to be expected considering the extensive building operations going on, and the lightness of the stocks that have been carried. Plumbers are naturally very busy, and are ordering freely in all lines.

The market is very firm and prices may advance at any moment. The long anticipated advance has occurred in iron pipe. There has been no change in brass discounts. Trade is good all the way round, and the feeling among the trade is very bright indeed, and manufacturers are commencing to talk about a banner year.

SOIL PIPE—There is no let up in the scarcity of soil pipe, and users are begging for material. Orders come in freely from all parts, and manufacturers are hard pushed. The market is firm with no change in discounts. We quote light 60 off, medium and extra heavy 70.

LEAD PIPE—In common with soil and iron pipe, the demand is very strong. Orders are heavier in bulk, and there is no material going into stock. The market is firm, and we quote: pipe and waste at 27½ off; traps and bends at 50; caulking lead at 5c per pound.

SOLDER—There is a very good demand, and plumbers and roofers are using all the stuff they order. The market is unchanged at 19½c for half and half, and 18½c for wiping.

IRON PIPE—As has been anticipated for some time iron pipe has been advanced. Prices in the States have been up for some time and with raw material stiffer and the demand good the local market has been compelled to follow suit. We now quote: ¼ inch black 63; galvanized 48; ⅜ black 59, galvanized, 44; ½ black 69, galvanized, 59; ⅜ to 4 inch black, 71½, galvanized, 61½.

RADIATORS AND BOILERS—Considerable difficulty is being experienced in getting delivery from the manufacturers. The demand is very heavy, and although the plants are working at full pressure they cannot cope with it. This state of things is expected to last well into the new year. The market is firm, and we quote. Steam boilers 60 and 10; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 10; steam radiators, 50.10 and 2½ per cent.

ENAMELWARE—Manufacturers are hard pressed to supply the orders of the jobbers. Many houses are waiting for the enamelware. Stocks are practically nil, and the market is firm and unchanged.

SCRAP METAL—Scrap is still on the light side with buying somewhat brisker. We quote: Heavy copper and wire, lb., 11c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6½c; tea lead, 2½c; heavy lead, 2½c; scrap zinc, 3c; No. 1 wrought iron, $11; machinery cast scrap, No. 1, $14; stove plate, $11; malleable, $12; miscellaneous scrap steel, $6.

METAL—Buying has been good. Despite fluctuations in the primary markets prices have held with the exception of copper which has been cut ¼c. We quote: Ingot copper, 14¼c; ingot tin, 33c; lead, $3.60.

TORONTO.

October 14.—All plumbing lines are selling well at the present time and the condition of the market is firm. Every master plumber in the city has plenty of work ahead and the situation is very promising. Gossip says that one of the larger concerns manufacturing heating goods will at a not distant date increase its capital and expand its business.

Prices are steady with the exception of a slight flutter in heating goods, rumors of cutting on radiators still being in evidence. 35 and 40 gallon hot water boilers have advanced. Solder is strong, due to the large buying, and possibly because of the advance across the border. New prices on black and galvanized iron pipe are issued this week, and they show advances of from 3 to 5 per cent. Some enamelware lines are scarce, particularly is this true of baths and roll rim sinks. Brass goods are steady and unchanged in price as yet, though the new discount list is expected before the end of the month. The changes are not expected to be radical.

ENAMELWARE — Master plumbers and supply houses report a scarcity of certain wantable sizes of baths and roll rim sinks for fair-sized houses. In fact there has been a great demand for all enamelware lines. Closet combinations and lavatories have had good sales of late. Laundry tubs and sets as well have been going well. Prices are unchanged, but very firm.

BOILERS AND RADIATORS—Rumors are again current that cut prices have offered on radiators. Manufacturers and supply men state that this condition is not at all general, however, though asserting that the delivery of heating goods at the figures booked in early summer, when lists were withdrawn, has not been at all beneficial to trade. All heating men report bumper business in both the shipment and setting up of furnaces and all heating lines. The advance on 30-gallon hot-water boilers has caused the larger sizes to advance also. 35-gallon boilers are now $5.75, and 40-gallon boilers are $6.75.

IRON PIPE AND FITTINGS—Pipe lists were withdrawn towards the close of last week and on Monday last new prices were substituted. In general they show an advance of from 3 to 5 per cent. on the various sizes from ¾-inch up. On black pipe the new prices are ¾-inch, $3.28 per 100 feet; 1-inch, $4.70; 1¼ inch, $6.41; 1½ inch, $7.70; 2 inch, $10.26; 2½ inch, $16.39; 3 inch, $21.52; 3½ inch, $27.08; 4 inch, $30.78. On galvanized pipe the new quotations are ¾-inch, $4.43; 1 inch, $6.35; 1¼ inch, $8.66; 1½ inch, $10.40; 2 inch, $13.86; 2½-in., $22.14; 3-in., $29.07; 3½ inch, $36.58; 4 inch, $41.58. Cast iron and malleable fittings remain at the old figures. The big demand for smaller sizes of black pipe continues. There is also a big call for galvanized pipe.

BRASS GOODS—The new discount list is promised for the beginning of October. It is believed that the changes will not at all be radical. Trading is improving.

LEAD PIPE—Trading is fair and shows some improvement. Prices are unaltered. Pipe and waste are 27½ p.c.; traps and bends, 50 p.c.; with calking lead 4½ cents a pound.

SOIL PIPE—Very good business is being done in soil pipe of late, which has greatly strengthened the situation and the market quotations, though actual prices are at present unchanged.

SOLDER—Though stocks are still fairly large there is a decidedly firmer tone to the market, due to the big demand for solder. No doubt, also, the advance in solder prices in the United States has had a tendency to make the situation here much stronger. Quotations are yet at 18½ cents for wiping and 19 cents for half-and-half.

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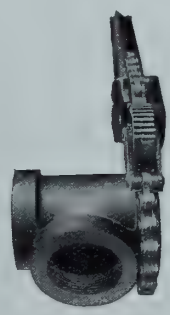

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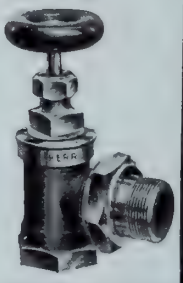

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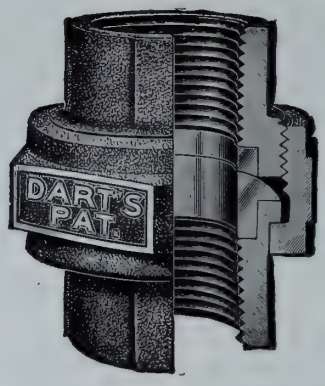

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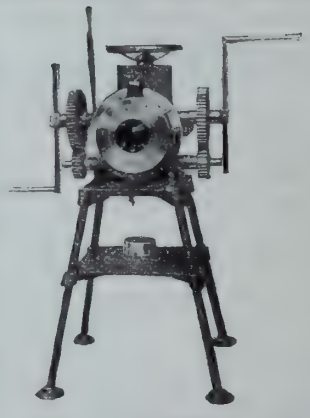

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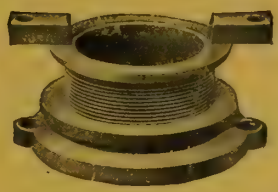

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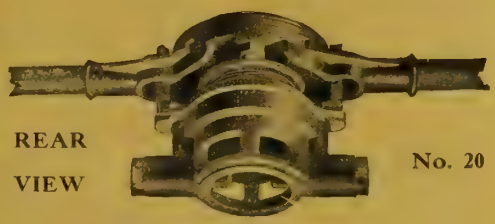

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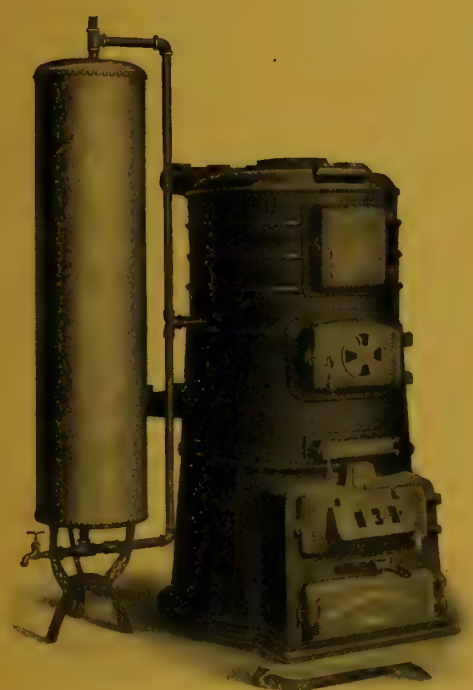

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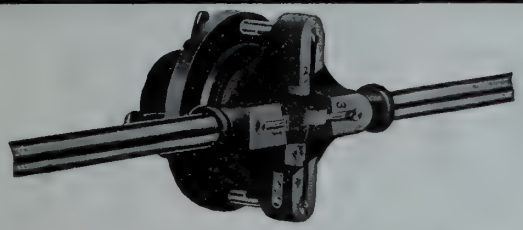

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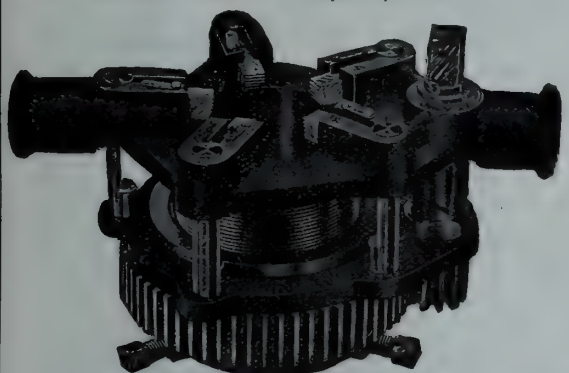

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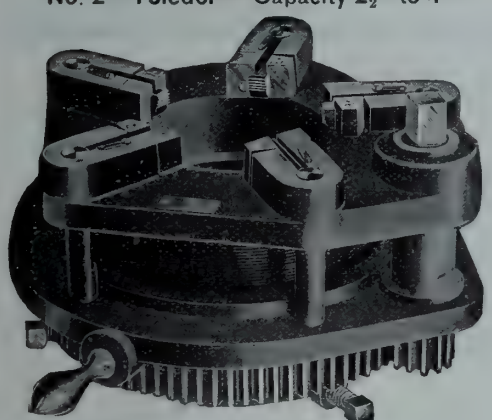

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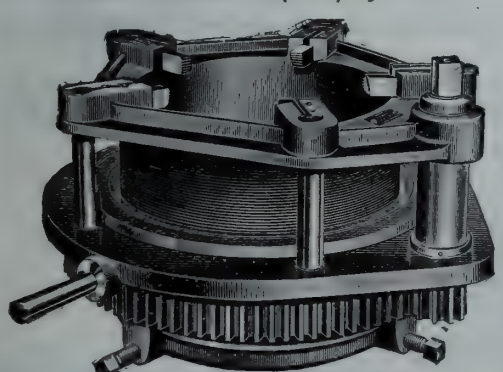

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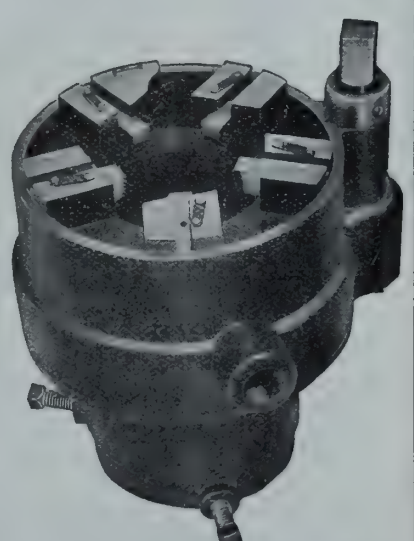

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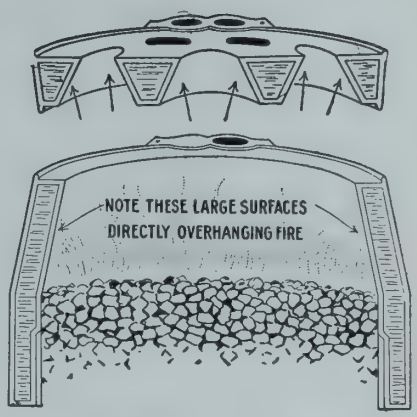

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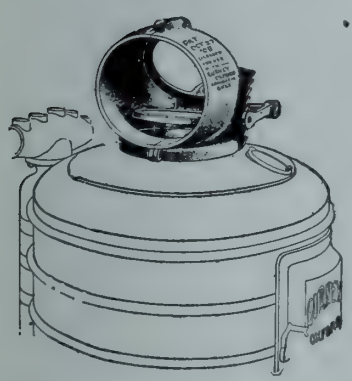

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TORONTO, NOVEMBER 1, 1909

THE SECRET COMMISSIONS ACT.

To prevent the payment or acceptance of illicit or secret commissions, an Act has been passed by the House of Commons at Ottawa, amended and approved of by the Senate, and is now in force. It is to be known as The Secret Commissions Act, and is applicable to the business of travelers or agents and manufacturers who employ them. The Act is known as Bill 31, and reads as follows :

Everyone is guilty of an offence and liable upon conviction on indictment to two years' imprisonment, or to a fine not exceeding two thousand five hundred dollars, or to both, and, upon summary conviction, to imprisonment for six months, with or without hard labor, or to a fine not exceeding one hundred dollars, or to both, who,—

(a) being an agent, corruptly accepts or obtains, or agrees to accept or attemps to obtain, from any person for himself or for any other person, any gift of consideration as an inducement or reward for doing or forbearing to do, or for having after the passing of this Act done or forborne to do, any act relating to his principal's affairs or business or for showing or forbearing to show favor or disfavor to any person with relation to his principal's affairs or business ; or,

(b) corruptly gives or agrees to give or offers any gift or consideration to any agent as an inducement or reward or consideration to such agent for doing, or forbearing to do, or for having, after the passing of this Act, done or forborne to do, any act relating to his principal's affairs or business, or for showing or forbearing to show, favor or disfavor to any person with relation to his principal's affairs or business ; or,

(c) knowingly gives to any agent, or, being an agent, knowingly uses with intent to deceive his principal, any receipt, account, or other document in respect of which the principal is interested and which contains any statement which is false or erroneous or defective in any material particular, and which, to his knowledge, is intended to mislead the principal.

(d) Every person who is a party or knowingly privy to any offence under this Act shall be guilty of such offence and shall be liable upon conviction to punishment hereinbefore provided for by this section.

The latter clause was an amendment to the original bill, which passed the Senate on March 31 last. After being amended it was sent back to the House of Commons and agreed to on April 21 and was finally sanctioned by the Senate.

The Practical Meaning.

The Secret Commissions Act, as its name infers, prevents the giving of secret commissions, rebates, or considerations.

A traveler who sells an article to a master plumber or heating engineer cannot legally give any secret rebate or commission to induce them to purchase from him, nor can the buyer accept a secret rebate. If the goods are sold for less than the manufacturers' price in the ordinary way, the sale will, of course, be legitimate in the eyes of the law ; but if the goods are sold for the manufacturers' price and the salesman puts his hand in his pocket and gives a rebate or commission to the buyer, then the sale is illicit and that salesman, if convicted, is liable to imprisonment for two years, or to a fine not exceeding $2,500, or both, as mentioned above.

One way that this has been done in the past was by the agent or traveler giving a buyer the secret rebate in order to get his business and then charging up the rebate to his employer or the firm he represented as road expenses. The new bill makes such an act contrary to the criminal code.

In the event of the traveler or agent selling below the manufacturers' price and doing so openly that traveler or agent does not commit a breach of the law. The manufacturer, however, has the privilege of determining to whom his goods shall be sold and at what price, and in such a case, if he desires, may refuse his goods to the house whose travelers or agents cut down his price.

An Example.

To take a hypothetical case, let us assume that a certain traveler wishes to "get in right" with the firm of heating contractors, and have him recommend his boiler, radiator or whatever it may be, secretly gives him an extra five per cent., charging this rebate to hotel or other expenses, and gets his money back from his firm.

Then when the traveler for a house doing business "on the square" comes along, he finds he is up against a competition that he cannot legitimately meet.

Clause (d) in the above bill is the amendment that was made to it after it had reached the Senate. It makes the purchaser just as liable as the traveler or house he represents who is guilty of a breach of the Act.

A similar Act is in force in Great Britain, and any attempted evasion of the law is severely dealt with. The law is timely in Canada, and it is hoped it will stop the practice of unfair and dishonest methods of getting business.

IS BAD PLUMBING RESPONSIBLE FOR DISEASE?

In and around Montreal an epidemic—or practically an epidemic—of typhoid has been raging, and the usual denunciations of the water and milk supplies have been forthcoming. There is no doubt that a very reprehensible state of affairs exists in the metropolitan city and its surburbs, so far as water and milk are concerned. Primitive methods of by gone days are still employed in bringing the water from the St. Lawrence to the houses. There is no filtration, the intake pipe does not extend far from the shore, and it is close to the sewer outlet. When the general cry of the doctors is "boil the water," it can be imagined that there is something radically wrong somewhere. The milk, too, is banned in the same way. With the want of inspection of farms and of milk vendors, the flagrant cases of dirty churns and storage rooms, a state of things exists in Montreal that is discreditable to any civilised city.

But although many an outbreak of disease has been traced to bad milk and water, there is an absence of unanimity in ascribing this typhoid outbreak in Montreal and suburbs to the milk or water, and H. J. Clayton, secretary of the Montreal Plumbers' and Steamfitters' Union has come forward with the statement that the typhoid epidemic has been brought about, not through these causes, but through bad plumbing. Mr. Clayton takes the case of the municipality of St. Louis, which is shortly to be taken into the City of Montreal, and says that in this district, where typhoid has been raging:—"The majority of the new houses are built to sell, and the plumbing that goes into them is skimped in a shameful manner. I know of one doctor alone," says Mr. Clayton, "who has thirty typhoid cases on his hands. The people who live in that district are professional and business men. They do not drink city water. They buy largely of bottled distilled water. I believe that the typhoid epidemic is caused not by water, but by bad sanitation, the natural result of careless plumbing done cheaply."

This is a very serious state of affairs, and when it is understood that there is no system of inspection at all in this district, it can be said that Mr. Clayton is drawing attention to a very great evil and a source of peril that, while it may not be appreciated to its full extent by the laymen, is recognized by the sanitarian. Bad plumbing in a house is a continued menace to the health of the inhabitants.

Of course, it is argued that as typhoid cannot be inhaled the question of plumbing cannot enter, and that if there was such a thing as sewer gas loaded with deadly miscrobes, plumbers who are continually working at the mouths of drains would be a most unhealthy body of men, whereas they are not.

But whether medical authorities differ as to the question of the contagious nature of typhoid, and how this would reflect on the bad plumbing question, there is no doubt that bad plumbing undoubtedly lowers the vitality of those living in the neighborhood, and predisposes them to disease. Therefore, while a medical man may say that the spread of typhoid cannot be directly traced to bad sanitation, there is no doubt that he will admit that it renders a person much more liable to succumb to the microbes.

Apart from the question of bad plumbing, a leading sanitarian suggested to the writer that the unhealthy state of many restaurants was responsible for many of the typhoid cases in our large centres. He pointed out that it would be noticed what typhoid seemed mostly to attack young business men, who would be in the habit of dining in restaurants. He said that he had in the course of plumbing work, gone into cellars and refrigerators of restaurants, which were absolutely foul, never having been cleaned from one year's end to another, while rats and flies, well recognized disseminators of disease, had free play over joints of meat and so on.

It is apparent therefore that not only in plumbing, but in the latter direction the plumbing fraternity through the nature of their work can do a great deal of public good in pointing out and remedying the causes that, as in the City of Montreal, make typhoid and other diseases so prevalent.

OFFICIAL NEWS
N. A. M. P. & S. F. of CANADA

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Next Convention will be held at Toronto the last week in August, 1910.

MASTER PLUMBERS' BUSINESS METHODS.

Master plumbers who are constantly complaining of the conditions under which men in the trade are working to-day, and who have received letters from officers of the Master Plumbers' Association, without replying to same, are deserving of the severe censure given in the various officers' reports made to the Montreal convention.

The successful master plumber is not the one who continues to pack his kit of tools and do journeymen's work, but the one who looks closely after the business end and stops the leaks, due to lax bookkeeping, sees that collections are made promptly, bills paid regularly and credit maintained, and letters answered on the day received.

Master plumbers who aspire to be sanitary engineers should aim to develop their business to a point where they can hire mechanical ability and, while not neglecting the overseeing of the practical end, pay more attention to the estimating and business part of the business.

Business courtesy demands a prompt reply to every business letter received.

THE NEW B. C. VICE-PRESIDENT.

John Colbert, Victoria, who was elected vice-president for British Columbia in the National Association of Master Plumbers, has been in business at Victoria for over 25 years, his business having grown from a small shop to one of the largest in the province. It was formerly conducted under the name of Colbert & Warner, but is now known as the Colbert Plumbing & Heating Co. One of the largest plumbing and heating jobs that has been undertaken for some time at Victoria is the new seven-storey Pemberton building, this work being done by Mr. Colbert.

Mr. Colbert has taken an active interest in the organization of the trade in the past, and if he puts his shoulder to the wheel, British Columbia will soon have a live branch of the Canadian Society of Sanitary and Heating Engineers.

The Corrosion or So-Called Corrosion of Water Pipe

Effect of Water and Other Destructive Agents on Various Kinds of Pipe Outlined by W. A. Bradford, in the Metal Worker.

There is undoubtedly a great difference between corrosion and what would seemingly be called corrosion. To illustrate this the two accompanying reproductions of photographs are given. Without doubt the interior of both pipes look apparently the same in both photographs, and yet the cause and effect of their stoppage is entirely different. In referring to the two photographs throughout this article, I shall refer to them as Fig. 1 and Fig. 2. It required some time before I was able to secure two photographs of pipe ends which would illustrate this article.

Effect on Iron Pipe.

Fig. 1 shows two sections of ¾-in. plain iron pipe which were cut at random from a length af pipe used as a cold water service pipe. The outside surface of the pipe would suggest its having buried in the ground, causing it to rust, but this particular pipe was suspended from the floor timbers overhead in the cellar. You will notice how regular the deposit is in both pieces of pipe, working from the sides to the centre of the pipe. This was a plain iron service pipe and was in actual use about 15 years.

Effect on Brass Pipe.

Fig. 2 shows the spud ends of a pair of ¾-in. brass stove couplings which were screwed into the cast iron water front of a stove. They are placed in the photo in their relative position, the top coupling being the flow and the bottom one the return or bottom pipe

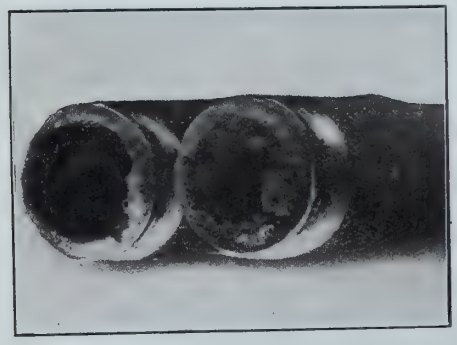


Fig. 1.—Examples of So-called Corrosion.

connection between stove and boiler. They were in use about three years. The top coupling in Fig. 2 shows less stoppage or formation than the lower. This may be accounted for by the fact that the movement or velocity of flow is greater in this pipe than in the lower pipe, owing to the expansion of the water as it becomes heated in the water front. Now the stoppage of the couplings was not due to corrosion, as they had not deteriorated. The entire matter forming the stoppage was of foreign substance. Without doubt it contained a percentage of oxide of iron, but this was only one constituent part. A short distance from the end the bore of the coupling was entirely clear, showing this was clearly a case of stoppage and not corrosion. It is not natural for brass to corrode in this particular manner. As a rule, the interior bore of brass pipes through which water passes is worn away. The oxide of iron may attack the brass surface to the extent of gaining a hold, after which the bore of the pipe ends becomes choked by a foreign substance, especially when they connect with an iron pipe or other iron surfaces. In every case we refer to it as corrosion. Such a statement, I believe, is erroneous and misleading.

To my mind, the condition of the pieces of pipe in Fig. 1, while it has the appearance, cannot truly be called the result of corrosion. On close examination it showed that the interior surface of the pipe had not deteriorated to any great extent. The residue which had formed on the inside of the pipe seemed to have attacked or corroded the inside surface of the iron pipe only enough to gain a hold, after which the formation continued gradually until the passage or interior bore of the pipe was entirely choked by the residue which is evidently carried in solution in the water. Doubtless this deposit is more noticeable in the smaller service pipes, as the current or flow through them is less frequent than in the larger pipes. This allows the matter to collect and adhere more rapidly and firmly to the interior surface of the pipe in the form of a precipitate. As the formation grows inside the pipe the friction to the flowing water becomes greater, thus aiding the growth. In large cast iron mains the stoppage is not so great or the formation as rapid, consequently the friction to the flowing water should be less, and, as there is always a movement of water in the pipe, the residue does not have an opportunity to adhere as rapidly to the inside surface of the pipe.

It is a common sight on viewing the inside of large cast iron water mains to find a thick deposit or formation of this same matter clinging to the inside surface of the pipe in the form of large barnacles. These barnacles, without doubt, are broken up from time to time or wear off and pass away in small particles or in solution with the water into the smaller service pipes. The com-

Fig. 2.—Brass Couplings Showing Deposits Inside.

parison as cited above tends to show that the formation of this peculiar substance is not due to any affinity which it might have for cast iron, plain or galvanized wrought iron or steel pipe, as the pipes in either case have not been attacked by the water to any great extent and converted into rust or corrosion.

Meaning of Corrosion.

The word corrosion is built up from the Latin word rodere, which means to gnaw. As the rat or rodent gnaws the wood, so will the action of certain chemicals, water or the elements, eat or gnaw at the surface of metals, which causes the metal to deteriorate. If this action is applied to the walls or side of the pipes they will in a short time be eaten away (gnawed or corroded through). The cause of corrosion in this case would be the water carrying with it in solution matter which was detrimental to the iron pipe. If we expose a piece of cast iron to the air and do not protect it from the dampness its exterior surface is soon converted into a thin film of rust or corrosion, granular in formation, which may be rubbed off in the form of a

dry powder, which is partially soluble in water. If wrought iron is substituted in place of the cast iron to the same weather conditions rust or corrosion forms on the surface of the iron in the form of a thin scale, which is readily detached from the iron when the latter is moved. These two cases as cited may be truly called the result of corrosion.

Effect of Water on Pipe.

When lead and brass pipes are used for cold water supply pipes a thin deposit or film is formed on the inside of them after they have been in use a short time. This deposit is generally brown in color, about as thick as writing paper and somewhat granular in formation. After this coating is once formed on the inside surface of this style of pipe the action ceases, leaving the interior bore of the pipe with a smooth hard surface of this deposit. When pipes of these materials are used and the formation has taken place on the interior the pipes seem to be impervious to any further action of the water; therefore it should be an advantage rather than a disadvantage, as it has a tendency to preserve the pipe and eliminate the danger of lead and brass poisonlng when using for drinking purposes water which has been allowed to stand in these pipes.

Catalysis Defined.

Would it not be reasonable to presume that the formation which occurs was somewhat akin to catalysis. It was formerly believed that in catalysis the agent (which in this case would be the pipe) acting on certain substances or fluids (water) which came in contact with the exposed surfaces of the agent (pipe) formed a reaction. This reaction. we will say, in this case, acting on the water in the pipe, had a tendency to build up or construct a sub-

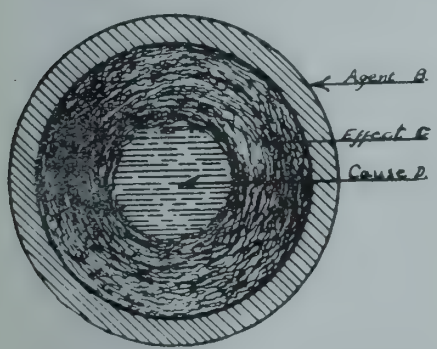


Fig. 3.—Illustration of Catalysis.

stance of like nature, but the corrosion or action, of course, would be somewhat detrimental to the pipe, as the pipe itself was the original source of supply for this foreign formation. It is now believed (if I may quote from eminent authority) that such reactions are attended by the formation of an intermediate compound or compounds, so by alternate composition and decomposition the agent (pipe) is left apparently unchanged. This, I believe, is the cause of a good deal of our so-called corrosion in iron and other pipe, which if given its proper name, would be called stoppage instead of corrosion.

Fig. 3 may illustrate this more clearly. In this B represents the pipe walls, the interior one acting as agent; C the result of composition and decomposition due to catalysis; D the water or fluid in pipes containing agent for reaction. If we pause to consider, in the breaking down or corrosion of the iron pipe wall forming the pipe there would be a gradual eating away of the iron. These particles of iron being broken away continually from the sides of the pipe must of necessity be washed out through the valves and faucets as water is drawn from the pipes. Thus the interior diameter of the pipe would increase as the action continued, and thus, instead of having an accumulation of foreign matter in the pipe to which we refer as corrosion, we would in reality have a larger interior space or bore. There is a fundamental principle in electricity which is that "like rejects like and attracts unlike," which applied to this case—that part of the material which was cast off by corrosion—would be rejected, and that part of the foreign substance of unlike nature carried in solution in the water, and unlike or of foreign origin would be accepted. I do not think electrolysis has any effect or is the cause of corrosion in iron pipe, as the result of such action is entirely different.

Effect of Electrolysis.

In Fig. 4 is shown two pieces of pipe which were destroyed by electrolysis; one is a piece of ¾-in. 4-lb. lead pipe, and the other a piece of ¾-in. lead lined pipe. I think the view shows the effects of this action on the pipe sufficiently clear and needs no further explanation.

Advantages of Iron Pipe.

Since a better grade of soft steel pipe has been placed on the market I think the effects of real corrosion by the deterioration of the pipe is on the decrease in this locality. Pipes of either iron or steel have many good points to recommend their use, especially the strength of the pipe, absence of any poisonous element, and the ease with which they are joined together. They also make a neat appearance when put up in good alingment. It would be useless to argue for an iron service pipe in place of a lead service pipe for a water supply inside of a house, as I do not believe anything can excel a lead pipe, especially for cold water supply pipes, but everyone does not feel as though they could afford to pay the difference on first cost between the lead and the iron pipe, even though it is explained to them that lead will outlast the iron pipe by a good many years, and of course they are entitled to their doubt.

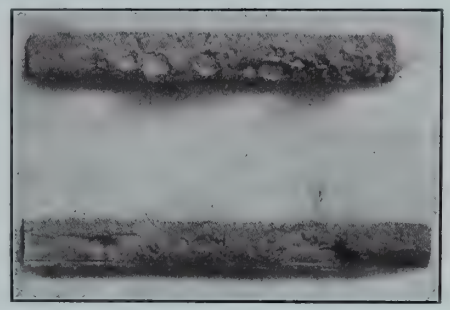


Fig. 4.—Effect of Electrolysis.

There is no question that the lead will cost three times what the iron pipe would, and when they insist on cutting down the cost of the plumbing I recommend that they use a galvanized iron pipe in the cellar with all risers connecting thereto of lead or brass pipe. By this method the main supply pipe in cellar may be readily and cheaply changed at any time, and I frequently find that people who could not afford to put in a more expensive pipe than the iron originally, in changing use lead or brass pipe.

With pipes whose bores are choked to the extent of those shown in Fig. 1 it is almost impossible to get a cleaning rod through them, and we suggest that they be replaced, as the cost of the time of installing with the price of new pipe is less than the cost of the time required to clean the old pipe, besides being more satisfactory when completed. I know of no method by which any substance may be introduced into the water to prevent stoppage or corrosion without effecting the water. I have set up and made appliances for introducing coal oil and soda ash into pipes and boilers used for mechanical purposes, but either of these would be ruinous in a water supply for domestic purposes.

Test of Cast Iron Pipe.

I have made a few simple tests to ascertain, if possible, the extent of the corrosion or deterioration of the pipes which had become clogged. I will not go into details as to the results I obtained, as I think one test I made will suffice. I selected at random from some old pieces of pipe which had been taken out on account of stoppage a piece of ¾-in. galvanized iron pipe. This I cut into several pieces 6 in. long. As the results obtained were comparatively the same in all cases, I shall only refer to one piece. The inner bore of the piece

of pipe was almost entirely closed by the so-called corrosion. All of the sample pieces weighed approximately 9.75 oz. A piece of new pipe of the same length and size weighed exactly 9.20 oz. The difference in weight between the old and the new was 0.55 oz., or a little over ½ oz. To clean the residue from the old pieces they were placed in a pan over a gas burner and boiled in a solution of soda ash and water, consisting of 10 parts water to 1 part soda ash (by measure). Fifteen minutes after the water began boiling the deposit on the inside of the pipe began to loosen, and at the end of an hour I was able to scrape all of the residue from the inside surface of the pipe. The old samples when weighed after cleaning averaged about 8.125 oz., which, compared with the weight of the new, gave a difference of 1.075 oz. lighter, which is the depreciation of the pipe owing to pitting and corrosion in piece 6 in. long. Thus :

	Ounces
The old pipe cleaned weighed.....	8.125
Difference between old cleaned and new, weighed	1.075
Weight of new piece	9.200
Difference between old sample and new	0.55
Original weight of old sample	9.75

It may readily be seen, after accounting for an amount in weight equal to the original weight of the new piece of pipe, there still remained over ½ oz. of foreign substance, which, without doubt, aided in filling the interior bore of the pipe, and which stoppage we refer to as corrosion. Referring to the condition of the pipe it was found on examination to be pitted in some places more than others. The pittings were not spaced uniformly or equal distances apart, but varied quite a little in this respect. The pipe had been in use about 12 years and looked good for six or eight years longer without showing signs of a rupture through the outer side, as the general depreciation was only about 14 per cent. of the original weight. The samples tested, I found by experiment, were of wrought iron pipe.

Vegetable Growth in Pipes.

Of course, the action of water on pipes varies greatly, according to the locality and nature of the water in use. At the present time throughout the metropolitan water district near Boston they are experiencing quite a little trouble with the service water supply owing to the presence of asteronella. This is a form of bacteria of vegetable or low animal life, and is due to a growth in the water caused by a lack of sunshine, open weather through the winter months and an absence of frost and snow. The water as a rule in this locality is soft and would not have the injurious effects on iron pipe that some of the harder waters would, or some which are impregnated with foreign matter. I simply cite the case of the asteronella in the water to show that, if it is possible for the formation of a substance like coral to take place in water, why is it not reasonable to assume that a formation similar in nature might take place in the pipes due to the presence in the water of this or some other low form of animal and vegetable life.

How to Cover Boilers With Plastic Cement

Suggestions Made by "Phoenix" in Domestic Engineering, as to Preparation and Application of Material — The Cost of Covering and Saving in Heat and Fuel.

In covering the boiler with the magnesia-asbestos plastic cement, it is well to know something of the material which is being used and also how to properly prepare the asbestos for use. Many jobs which scale off or present a lumpy appearance are thus, simply because the material was not properly worked up befor being applied to the boiler, fittings, or smoke pipe.

Asbestos is a singular mineral, found in various parts of the world, the best coming from Quebec Province. It seems to be a connecting link between the animal and vegetable kingdoms.

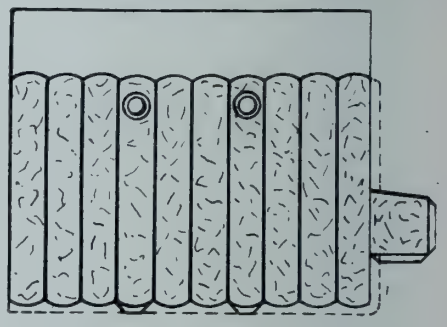
It has withstood the tests of fire, acids and even time itself, and comes up smiling to be used with the greatest advantage in dozens of different manners in twentieth century life.

It is found in veins or seams in the rock, these veins being something over an inch in thickness, running vertically or horizontally. The rock upon being broken has rather a dark green appearance, but the fibres of asbestos, when detached, are white.

When being prepared for use, the rock is crushed, the resulting mass winnowed and the asbestos fibres mechanically combined and prepared by various processes, according to the special uses required.

The plastic asbestos mixture comes to the fitter in bags weighing 50 or 100 pounds. It is more economical to buy the 100-pound bags. The amount required to cover the boiler depends entirely upon the boiler's size, and also as to how much experience the person has had who is applying the asbestos. A green hand will waste 25 per cent. of the material. Generally speaking it requires anywhere from 150 to 1,200 pounds of asbestos to cover the boiler, depending, as previously stated, upon its size. Another way to figure the amount is to estimate about six pounds per square foot for the surface to be covered.

The asbestos should be thoroughly wet before being applied. This means that a sufficient amount to put on two coats should be soaked in water several hours before being applied. Many people are afraid of getting the asbestos too wet. This is a mistake, as it is a far greater defect to apply asbestos in a stiff, sticky, lumpy conditions. Empty the asbestos into a box and put in enough water to mix it to a thin mass, which can be easily worked with a hoe or shovel. Let this mass stand several hours, possibly over night. When examined again, you will be surprised to find that much more water will be needed to bring it to the proper plastic condition for application.



Side of Boiler Properly Prepared for Escape of Steam After Second Coat of Asbestos is Applied.

The first coat applied to the boiler is done by simply throwing little dabs of the asbestos against the side and top. These little bunches of asbestos are about the size of a marble, and should be quite wet in order to spread out well. The more and wider they spatter out the better the chances are for the second coat to stick. It is not necessary to entirely cover all the iron.

The boiler should be pretty well warmed up, but not too hot, and no more asbestos applied until this first coat is thoroughly dry. In applying asbestos many persons simply daub it on with both hands. This makes a very poor job, as a boiler so covered presents a lumpy lop-sided appearance.

Besides, the asbestos should be pressed down to place with a trowel, and in

applying the second coat it is necessary to work out the general form and outlines of the boiler, leaving no large ridges or humps to spoil the symmetrical effect. This can be easily attained by using a little care and foresight and not trying to complete the job in half an hour's time.

While proceeding with the second coat frequent slashes or cuts should be made in the asbestos along the sides, top and back, where the asbestos is being applied. These are made for the purpose of letting out the steam, which results in evaporating the water from the asbestos by the boiler's heat.

If this is not done the asbestos will swell in various places and either drop off or leave a large hollow place which will afterward crack. The manner of making these slashes in the coat is shown in Figure 1. There is no necessity for any regularity in this operation. Simply have enough places for the escape of the steam. This will also afford, when dry, an excellent hold for the third and finishing coat. The dark vertical lines in Figure 1 illustrates the iron cement used in closing the spaces between the sections. These spaces should be thoroughly closed before the asbestos is applied. Te dotted line around the back and over the top of the boiler represents the finished coat, which should be anywhere from 1¼'' to 2'' thick, according to the specifications.

About 1½'' on the sides and 2'' on top is a very good covering, although some prefer a heavier side covering.

When the second coat is thoroughly dried out, and hard, the last or finishing coat may be applied. If no canvas is to be used considerable care should be taken in smoothing down this last coat.

Mix with this last coat some good Portland cement in the proportion of about three of asbestos to one of cement, and apply with a trowel, smoothing the work down as you proceed. Try to conform to the outlines of the boiler. Get good edges and corners and aim to make the job take on a workmanlike appearance. The very last finishing can be done with a wet brush and follow immediately with the trowel, rubbing hard and polishing if desirable.

It may be required by the owner to paint this final coat, when it has dried thoroughly, and no cracks appear upon the surface. Another way of finishing is to apply canvas of a character to match the canvas on the pipe covering. This makes a very neat and serviceable finish and prevents the asbestos being injured or knocked off by hard usage or carelessness.

Asbestos may be applied to a boiler in another manner in warm weather. ed down in a workmanlike manner. The boiler is covered with wire netting, fastened thoroughly, and the mixture worked into place with a trowel. No fire need be built in the boiler. The asbestos so applied will require a long time to dry, and should eventually receive a finishing coat. This last method is a quick, though careless way, of covering a boiler.

The smoke pipe may be covered with the wire netting, and the asbestos applied, although the netting in this case is not absolutely necessary, as the asbestos will stick to even a hot galvanized smoke pipe, if put on according to the manner of covering the boiler as previously described.

Fittings may be covered after the same fashion, covering first with little daubs of asbestos, and then the second coat. The third coat may be omitted in covering fittings, as they are generally canvassed to match the pipe covering. The fittings should be hot when covered.

Some large hot water tanks are covered in the following manner: Asbestos blocks are fitted to the boiler over which the wire netting may be placed, and a finishing coat of the plastic asbestos then applied by trowel and then smooth-

The increased cost of covering a boiler should not for a moment be taken into consideration. If this matter is explained to the householder from the correct point of view, viz., that of economy, no reasonable customer will object to having the boiler, pipes and fittings covered. It is stated by one authority that ten square feet of uncovered pipe carrying steam at one hundred pounds pressure will cause a loss of two tons of coal in one year's time. It is also estimated that upon low pressure work the amount of fuel saved varies from 10 per cent. to 30 per cent. of the total amount of fuel consumed. The variation in the percentage is explained by the difference in the material used in covering the boiler and pipes. Carpenter estimates that the heat lost per square foot of uncovered surface on pipes is equal to two-fifths of a pound of steam.

Figuring the loss upon 100 square feet for a day of twenty hours, and for a season of 150 days, with coal at $5 per ton, the sum amounts to $30. The cost per square foot per year is found to be about thirty cents. How many seasons would it take to save enough to pay for covering the pipes and boiler?

Ventilation and Drainage Interceptor Traps

Extracts From a Paper Read by S. E. Burgess Before the British Association of Municipal Engineers, June, 1909.

I am of opinion that the ''interceptor trap'' is an essential feature for private drainage, and that where practicable all private drainage systems should be cut off from the sewers at a point as near the sewer as possible—just within the boundary or curtilage of any premises—by a properly selected and suitable interceptor trap, and that by sectionising and cutting off by effectively trapping the drainage of private premises from the public sewers, much good and great benefit is derived therefrom.

An important matter is that the proper type of interceptor trap should be carefully made, and only those traps that are self cleansing by reason of cascade and scouring action should be used; and wherever practicable the interceptor trap should have the further advantage of a properly constructed inspection chamber with, say, two courses of glazed brick benching to the sides of the channel invert, and that only where space is confined should an interceptor trap be laid without such inspection chamber.

I believe in, and wherever possible carry out, the principle of ''untrapped openings'' for the ventilation of both sewers and drains in the form of ventilating shafts carried up to a convenient height and to some out-of-the-way place. I am opposed to the so-called ''air inlets'' on drainage systems that are built only a foot or two above the surface of the surrounding ground. In many instances air inlets to the interceptor inspection chamber are inserted in the forecourts or palisading walls at the fronts and sides of houses. These inlets are more often ''outlets'' than ''inlets.''

Comments on English Customs.

I am opposed to the ventilation of public sewers through the drainage of private property, and do not consider it satisfactory that soil pipe ventilators on the drainage system of private property should be used for the purpose of ventilating the sewers of a local authority. In most cases the soil-pipe ventilators on house drainage are placed in such positions that the outlets therefrom are not far away from bedroom and other windows, particularly dormer windows, and other roof openings and air gratings. I am aware that the by-laws provide that soil-pipe and other ventilators on a drainage system are to be carried 3 feet above any window within a distance of 20 feet therefrom. This is under the

present condition that the drainage of premises is to be provided with an interceptor to trap off and isolate the private drainage system from the sewerage system of the district. If the interceptor trap were done away with and the w.c. soil-pipe and other ventilator shafts were made not only for the ventilation of the private drainage, but also for the ventilation of the main and other sewers it would not, in my opinion, be satisfactory and safe to terminate such pipe only 3 feet above any window within 20 feet of it.

I am a believer in the sectionising of drainage and sewerage systems and I would sectionise the main sewers of a town wherever the district is very hilly; the more openings on sewers and drains the better, provided such openings are in out-of-the-way places and are not a nuisance.

Drainage By-laws.

Dainage by-laws provide for two or more "untrapped openings" on a system of drainage, this meaning a so-called inlet, together with an upcast ventilator, one being placed at each end farthest from the other on the system. My practice is to instal (consistently, of course, with the possibilities of each construction) as many untrapped openings or ventilators as possible, and if instead of two I can get three or four, or five, on a big system of drainage, I recommend its adoption. I do not recommend "air inlets." All such ventilators, however, to be carried up in suitable positions and at suitable heights well out of the way of windows and other inconvenient places.

The same remarks apply to the ventilation of public sewers. All sewers, if possible, should be self-cleansing and no stagnation by deposit of sewage matter permitted, and as many openings for ventilation as practicable and wherever necessary.

These openings should not be on the surface of the road ways. Open gratings on sewer manholes at the road surface should be entirely abolished, except in places where an open manhole cover cannot possibly occasion any annoyance to anyone, i.e., where main sewers cross fields and other places with no possibility that an open grating would be detrimental and cause nuisance.

This necessitates, in my opinion, the construction of upcast shafts carried up at convenient places, particularly gable ends of houses, the termination of which should be well out of reach of chimney stacks. Specially constructed isolated ventilators should also be carried out by the local authority. In my opinion, every local authority (under whom the sewers are vested) should cleanse and thoroughly ventilate its own system of main and other sewers, and the private owner should not be burdened with the ventilation of sewers through his private drains by the soil-pipe and such like ventilators. It is apparent that in a well-laid system of drainage no accumulation of gas can take place, especially if through ventilation of the private drainage system is carried out by the two (and in cases where possible by more than two) untrapped openings.

House Drainage in Trap.

It is contended that the precipitated deposit of house drainage in the trap of the main interceptor becomes to some extent offensive and emits smell. I do not agree with this—the drainage of a house is constantly changed, and the liquid matter in the trap is also frequently changed. For this reason, in my opinion, not much smell can be emitted therefrom over and above drain air, and this is relieved by the (at least two) untrapped openings required under the by-laws. It would be far worse for sewer gas to be continually passing through the drainage system and out of the private ventilators, than the ordinary relief of the air from the drains themselves.

There are other ways which should be adopted by local authorities for the proper ventilation of the main and other sewers forming the sewerage system of their district. How is this to be accomplished unless compulsory powers are obtained for the attachment of ventilating shafts to private property? Reasonable powers could and should be obtained whereby the local authority can fix stack-pipe ventilators to the property of private owners, provided, of course, these ventilators are placed at positions suitable and without detriment to private interests and not cause nuisance.

With regard to interceptors, there are many on the market, and careful selection should be made. The use of a bad form of trap is the cause of general condemnation of interceptor traps, which are said to cause blockage of the drainage system and the consequent inconvenience and annoyance. In my experience I have not had occasion to be called to many blockages of traps. Naturally there will be blockages, as there are in all traps, but with care and careful flushing of the drainage system no inconvenience through this cause should be experienced.

A 6 in. drain laid with a gradient of not less than 1 in. in 60, in my opinion, should be satisfactory to cleanse a proper interceptor trap, provided such interceptor trap has a cascade action of say 3 in. There are, however, cases where I would not recommend an interceptor trap. These cases are where there are no internal water-closets, and where the length of drain in the curtilage of any premises does not exceed 10 feet.

In these cases for an outside water-closet an ordinary trap, either a combination pan and trap of the water-closet, or a separate trap immediately underneath the water-closet basin, is sufficient to intercept and trap off the sewer gas, and I would not in these cases ventilate the length of drain between such trap and the sewer—there is no need for it.

What English Laws Allow.

This is permissible under our by-law 75, wherein it is stated that "in the case where a drain does not exceed 10 feet in length, and does not pass under any building, and has no inlet within any building other than an outdoor water-closet," etc., etc. Under By-law 77, the requirement is at least two untrapped openings, i. e., the "air inlet" (?) and outlet as before explained. To this by-law, however, there are provisos, as follows:—

"If a water-closet has no internal communication, and where the distance between the trap of such water-closet and the sewer is not more than 10 feet, the requirements of the by-law with respect to untrapped openings of ventilators does not apply."

This qualifies the remarks I have made with respect to the direct connection to the sewer from the underside of the pan and trap to an external water-closet. If the distance of a drain from a sewer is more than 10 feet, but does not exceed 30 feet, with no internal water-closet communication, and there is an outside water-closet with an interceptor trap on the main drain for trapping off sewer gas (in addition to the trap immediately underneath the pan of the closet), it is permissible for one untrapped opening to be formed by carrying up a pipe not less than 4 in. diameter; but this does not apply, in accordance with a further proviso, if such drain is not more than 10 feet within the curtilage of the building in addition to the length of such drain from the building to the sewer. The object of this is a safeguard to trap off sewer gas from the branch (not exceeding 30 feet), within the confines of the curtilage, and to prevent air-locking between the two traps the one untrapped opening is permitted. I do not much favor this by-law and do not recommend the insertion of two traps, especially as the water-closet is outside.

If two traps are inserted, then I come back to the principle of at least two openings at any convenient height so long as the so-called inlet is not within reach of passers-by and window openings.

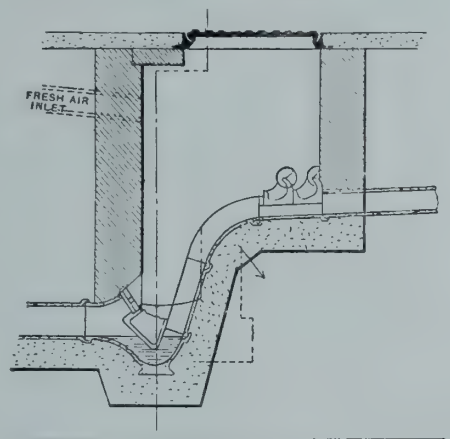
For the drainage of terrace houses with entrance to the back by a passage-way in the centre of the terrace, the sewer should be carried up the passage-way to the main interceptor chamber behind. Each house can then be separately drained into the main interceptor chamber with the soil-pipes and up or down cast ventilator attached thereto. No so-called "air inlets" are required, but the four ventilators of the soil-pipes on the drains falling to the chamber are the untrapped openings in accordance with the by-law, and can in no way become a nuisance or cause annoyance by the out rush of foul air from an "air inlet," placed in close proximity to the interceptor chamber. It does not matter which of the four openings is inlet and which outlet. A ventilator is also required on the sewer in the passage-way, such sewer and ventilator the liability of the local authority, and the separate drainage, etc., to the chamber from each of the houses the liability of the respective owners.

At the New Public Abattoir, South Shields, which cost £17,500, I carried out a system of drainage so that each building or block is separately drained and cut off from the sewer and from each other by interceptor trap, inspection chambers, and upcast and downcast ventilators complete. The drains of each department are eventually connected together, and, after passing through a main interceptor chamber and trap, discharge by a 12 in. outfall into a large trunk sewer. The principal interceptor trap is 12 in., traps for other buildings are 9 in. and 6 in., with a 4 in. interceptor trap and chamber for the dwelling house portion of the scheme. There are no so-called "air inlets" at the ground level, but in every case stack-pipe ventilators are taken well up and above the roof of the buildings, and with the exception of the superintendent's house, these ventilators are 6 in. diameter, the principle of two or more (in this case more than two) of untrapped openings has been thoroughly adopted. These slaughter-houses (which serve the whole of the borough) have been in full working operation for nearly three years. No trouble has been experienced with regard to blockages of any of the interceptors on the system. An ideal sectional system of drainage is in operation.

PREVENTING STOPPAGE OF DRAIN.

In the course of a paper on modern house drainage read before the Institute of Sanitary Engineers of Great Britain by John Lawrance, associate of the institute, an arrangement of the out flow pipe connection for the intercepting trap was suggested as a means for preventing the possibility of a stoppage of the house drain by the trap as ordinarily employed. The comments of the author are as follows:

The force required to properly flush the trap depends largely upon the depth of the water seal. Interceptors having a seal of 2½ in. are often fixed, whether the fall be 1 in 10 or 1 in 40. Obviously, a flush in the latter would have much less force than the former, and therefore would be much less able to plunge a trap with a deep seal. Interceptors having a much smaller seal should be fixed to drains having a slight fall. Within certain limits the seal of an interceptor may be either increased or decreased without impairing the value of the trap in other directions, by slightly tilting backwards or forwards whilst setting. This, however, requires care and judgment, and the interceptor should in any case be set with the trap full of water, and the depth of seal ascertained at the time of setting. A deep seal, while



Quick Discharging Outfall for House Trap.

highly desirable, is not indispensable to an efficient interceptor. There is no appreciable tendency to evaporation, the air in the house, drain and sewer both being warm and moist, and there should be no tendency to force the seal of the trap by air compression; consequently, the seal should remain always at its maximum depth.

The great difficulty which has to be surmounted is that of securing sufficient force of water to adequately force the contents of the intercepting trap. I suggest here a method of accomplishing this, applicable to all drains except those where the minimum fall only can be obtained. My proposal is illustrated in the accompanying diagram and is briefly as follows:

To bring the waste water to the front chamber through pipes having the minimum amount of fall which will insure the self cleaning of the drain. Some of the potential energy of the water is thus reserved until almost immediately over the trap. The water, if allowed to drop at this point, would naturally tend to fall in the form of a parabola, owing to the combined forces of gravity and momentum. Practically, this parabola would be provided, as I have indicated, by the use of a bend and a pipe discharging directly on top of the trap. The natural tendency of the discharge would enable it in this way to reach the trap with the smallest possible amount of friction, and the whole of its force would be available for plunging the trap, instead of being dashed against the side.

TORONTO'S PUBLIC BATH OPENED.

The Harrison city baths were opened at Toronto on Saturday evening last, by Controller Harrison, after whom they are named. These are the first public baths erected in Toronto, and a detailed description of them will appear in the next issue.

The baths cost close on to $40,000, with an extra $5,000 for furnishings. The cost of maintenance is estimated at $16,000 per annum, some portion of which may be met by making a nominal charge for the plunge.

The plunge occupies the central portion of the bath building. A separate entrance leads to this section of the structure. Immediately on entering from the street a passage way leads to the clothes-lockers situated on the ground floor and in the gallery. A number of shower baths are off the lower dressing-rooms, and every bather is expected to use one of these before entering the swimming-pool. The plunge bath has a cement floor and lining, is 26 by 60 feet in size, with a depth varying when full of water from 4 to 7 feet. The water is heated by an immense steam-pipe situated in one of the corners, and a muffler at the outlet makes possible the avoidance of hammering in the pipes. A bubble drinking-fountain is a feature of the swimming-room.

The front of the building is set aside for those desiring shower baths only, one half of the structure being set aside for women. Reception halls with an office between occupy the whole front of the building. Behind these are the baths —each one separately enclosed—about 10 for women and 16 for men. A large open shower space for children is also provided. On this floor, too, are a number of public urinals and water closets.

In the basement is located the laundry, fully equipped with laundry tubs, ironing boards with gas irons, electric dryers, etc. Behind this room is the laundry room proper, where are set up washing machines, boilers, and the other paraphernalia necessary for the cleansing of clothes. The rest of the basement is occupied with the boilers and engines which form the bath house plant.

A series of swimming feats made up the programme for the opening night.

The Problem of Sanitation in Towns and Cities

Address Delivered by T.A. Murray, Consulting Engineer, Toronto, at a Recent Convention of Medical Men at Saskatoon—Saskatchewan Province has Appointed Mr. Murray as its Advising Sanitary Engineer.

Sewage and water purification have, during the last 50 years, passed through an evolutionary period. The two subjects are closely related. Sewage contamination to a large extent provides the most objectionable impurities usually found in water. There are certain diseases which are recognized as capable of being water borne; such as typhoid, dysentery, cholera, etc. On the other hand, there may be impurities connected with water which are organic and may have nothing to do with sewage contamination. Two distinct public duties are now recognized in order to guard health from the evils of impure water; one, prevention in the first instance, or the guarding of water supply sources from pollution; and the other is taking proper measures to remove and counteract any pollution either organic or inorganic in the water before serving it out to the public.

Full of Organisms.

The problem of prevention comprises the subject of efficient sewage disposal. Wherever one or more persons locate, sewage is a necessary product.

Domestic sewage, as well as containing effete poisonous organic matters, is charged with innumerable microscopic organisms to the number of from 30 to 40 million per thimbleful or cubic centimeter. Many of these organisms are known to be harmful, and are the effective carriers of the infection of disease.

It is generally recognized that water is sent by Providence as a necessity to the welfare of mankind. It is now generally being recognized that it is a crime on the part of mankind to unnecessarily pollute this God-sent water.

Canada in one respect is in a fortunate position inasmuch as it can profit by the experiences of other countries and the great amount of experimental and research work done.

Many old pre-conceived theories with reference to sewage disposal have received their death blow. Chief among these is the well known and well advertised septic tank.

Septic Tank Experiments.

At one time, advocates of the septic tank held that it solved the sludge question, inasmuch as all the organic solids were digested by putrefaction. The royal commission by extensive experiment at the parent septic tank installation at Exeter, have shown that not more than 25 per cent. of the sludge is thus got rid of, while other authorities put the putrefaction elimination as low as 6 per cent.

It was also held that zymotic germs were killed by septic action. Nothing of the kind happens. The effluent from a septic tank is bacteriologically as impure as the sewage entering it.

The germs are changed into putrescible inorganic forms by a process of nitrification, by which organic nitrogen is oxidized to nitrates and nitrites. This is the natural process which takes place in soils, by which organic effete matter is rendered into forms suitable for the rebuilding of plant life.

Land Treatment of Sewage.

The process of nitrification is connected with the presence of oxygen and micro-organisms and may take place either in ordinary soil or in specially designed biological filter beds.

By allowing sewage to run over land of an open and friable nature, the sewage gradually percolates into the sand, the organic matter is absorbed by the soil in the upper layers and is then gradually oxidized or nitrified.

"Broad irrigation" and "intermittent filtration" are the two recognized methods of land treatment.

Broad irrigation simply means using the sewage for irrigation purposes on crop lands and distributing it by means of ridges and furrows. Intermittent filtration means the employment of land devoted solely to sewage disposal apart from any crop consideration, the land being divided into lots, which alternately receive a dose of sewage, thus giving time for the liquid to pass out of the soil pores, for the admission of oxygen, higher nitrificat, and a possible maintenance of equilibrium as between retention and oxidation.

When land is resorted to as the purification media, the system of intermittent filtration provides the greatest measure of success. The continued success depends, however, entirely on the suitability of the land.

The Biological System.

Hence the biological system of sewage purification. This system makes sewage purification independent of the character of the land; all that is required is a solid base on which to build simple structures, ideal homes built for the propagation and maintenance of the nitrifying and other organisms, homes or filter beds, if you like to so call them, in which under proper conditions and management the equilibrium between retention, absorbtion and oxidation can be successfully maintained.

Any degree of purification required can be obtained. It is, however, a question of reasonable purification and of cost.

The success of the system depends upon the following essential features:

(a) Preliminary treatment for removal of as much of the solids from the sewage as possible.

(b) Secondary treatment of passing the sewage through filtering media about walnut size. The depth of the media should not be less than 3 feet, and it is unnecessary to have it more than 8 feet.

Such a biological system will so chemically change any ordinary sewage that it is no longer sewage. The effluent will be non-putrescible.

The biological method or the land intermittent filtration process will greatly reduce the number of B. Coli. and other bacteria.

A further reduction is effected by the retention of organic solids in suspension and organic solids in solution absorbed in the filter to the amount of about 85 per cent. of the number entering the filter. So large, however, is the original bacterial count, that the resultant percentage is still in a proportion to render the non-putrescible effluent unsafe for dietetic purposes unless mixed with a large volume of pure water. The life of the resultant bacteria an effluent practically free from organic matter and thoroughly oxidized, is very short.

It therefore cannot be denied that although it is absurd to speak of nitrified sewage as potable water, a great and beneficial work is accomplished.

This nitrified and non-putrescible sewage effluent can be rendered practically sterile if required. The process, however, is in most cases unnecessary.

PLUMBING INSPECTOR ILL.

Herbert F. Shade, sanitary inspector, Victoria, B. C., has been ill for the past three months with rheumatic fever, but is reported as improving by R. C. Flitton, C.E., who is looking after Mr. Shade's work.

Mr. Shade is widely known in both Canada and the United States for his able articles on plumbing and sanitary subjects, and his friends will be glad to hear of his early recovery especially as he has promised to contribute an interesting series to The Plumber and Steamfitter as soon as his health permits.

The Master Plumber a Poor Collector

George W. Ryan, Author of "Bookkeeping for the Plumber," Analyses in Modern Sanitation the Business Weaknesses of Master Plumbers as Disclosed in a Study of their Dealings With Jobbing Houses.

Of all the obstacles encountered by a merchant plumber the item most troublesome must be his collections, and I have arrived at this conclusion by several different routes:

First—Inasmuch as the records of a multitude of jobbers show that the plumbers' accounts with them are generally settled as follows:

About 8 per cent. discount their bills.

About 2 per cent. have to pay cash in advance.

About 42 per cent. take 60 days' time.

About 30 per cent. take 90 days' time.

About 15 per cent. take 100 to 120 days' time.

About 3 per cent. fail, and only part of the account is eventually secured.

Total, 100 per cent.

Second—Because the standing and reasonable complaint of the plumber is that he is handicapped with the jobber because of the long-time accounts he is compelled to carry.

It is sufficient to realize that on an average only 8 per cent. of the plumbers discount their bills, and, starting at this point, let us try to present the reason why the other 92 per cent. lose the item of discount, which the majority of them fail to take advantage of.

It might be supposed that the 8 per cent. who discount bills regularly are concerns which have unlimited capital and a surplus which make it easy to to pay up in full as bills are received, but I assure you that while this is so in a few cases the large majority is made up of thise smaller concerns which so manage their affairs that the discounting of bills is possible.

I see them now passing in review, a stream of careful, aggressive business men who know their business to the smallest detail through careful study; men of modest capital and means, but who are sure winners in the end; men who plan and execute, whose surplus is growing slowly but surely into, first, a small plot of real estate, later a home, then an apartment house, later a larger deal, and so on.

How Success Can Be Won.

But take this same plumber in the first stages of his business and see what led up to his success and what special talent enabled him to control his own finances.

He first made a careful study of the amount he would have to invest to conduct his small business, and he did not embark in the business until he had the necessary amount saved.

In placing his firse order with a supply house, and in all his subsequent orders, he was very careful to order only such material as he would have either almost immediate use for, or later sale for—such articles as he considered staple and indispensable.

He selected one or two houses which were reliable and whose representatives were capable, obliging and interested in his welfare, and with these men and their houses he dealt almost entirely, after proper arrangements had been made with the credit men, with whom he had had a heart-to-heart talk.

And he paid no attention to some "windy" salesmen, representing some cheap houses who could "save him 50 per cent. on his purchases," as he well knew that the quality of the goods he would receive from them would be about on a par with the price.

He let work go undone rather than take it at a starvation price, and many jobs were lost by him willingly when he found that he could not land them at his price, which called for a fair profit.

Build Up a Reputation.

He gave an honest deal, good work and good material, and he employed skilled workmen, who were not allowed to "skin" a job, and gradually his reputation as a reliable plumber grew and with it his business. He discouraged the use of second quality material and especially discouraged the use of any bath tub unless it was of first quality and fully guaranteed.

The first day his shop opened it was with a well-thought-out system of bookkeeping and shop records, and these he found later were his guide and mainstay. They spoke to him, revealed to him the true condition of his accounts and business, guided him, kept him out of many a difficulty, prepared him for the unforseen and gave him the true facts regarding his expenses, his stock, his profits or his occasional losses.

He, furthermore, was not overly anxious to jump into a repair job until he knew whether the party ordering the work done had the authority to do so.

And, above all, in every case he looked into the financial responsibility of every one of his customers. His inquiries revealed a condition favorable or unfavorable, and he acted accordingly. In some cases cash in advance was demanded. In others he refused to touch the work at all. In others he rightfully insisted on protection against losses. In other cases his right to lien was clearly proven, and in every case these things were attended to before he obligated himself to do the work.

And, furthermore, he made an honest effort to collect his accounts; being prompt in his own affairs, he looked to others to reciprocate, but he carried his customers, in worthy cases, as long as he could, and won their friendship as a result.

The result, after several years' operation along these lines, was gratifying and showed success not possible without the methods before mentioned. And what did he have?

Some Valuable Business Assets.

First—He had secured the confidence of his customers.

Second—He had a good list of outstanding accounts, worth to him at least 98 per cent. of their book value.

Third—He had a good clean stock of goods, which were in demand and salable at any time.

Fourth—He had the warmest relations with the jobbing houses with whom he dealt.

Fifth—He had made money by taking advantage of his cash discounts.

Sixth—He had good health, as his worries were reduced to a minimum.

Seventh—He controlled his own finances and did not have to borrow, nor did he have to put the blame for delinquency on his customers.

Eighth—He had brought his business to that point where he controlled it and where his well-earned success enabled him to buy what he pleased, pay for it on time and invest his surplus as he pleased.

This is not an idealistic description of and imaginary plumber, for I have dozens of cases in mind, as I write, where these same conditions existed with the same results.

Try it! It is worth the effort.

The Glouchester street convent Ottawa, have purchased the adjoining property and will make extensive alterations.

Theo. Daoust, Montreal, has prepared plans for the erection of a private residence in Three Rivers for H. Goudin.

Hogle & Davis, Montreal, have prepared plans and are inviting tenders for the erection of a residence at Ste. Agathe for Mortimer Davis.

A syndicate of British and Toronto capitalists have purchased 350 acres just outside the latter city. The intention is to lay the property out in avenues and squares for high class residences.

Cutting Patterns in the Tin Shop

Readers of Plumber and Steamfitter are Requested to Make Use of this Department—Questions Regarding Patterns Will be Answered by Experts—Discussion is Also Invited on Any Matter pertaining to the Tin Shop.

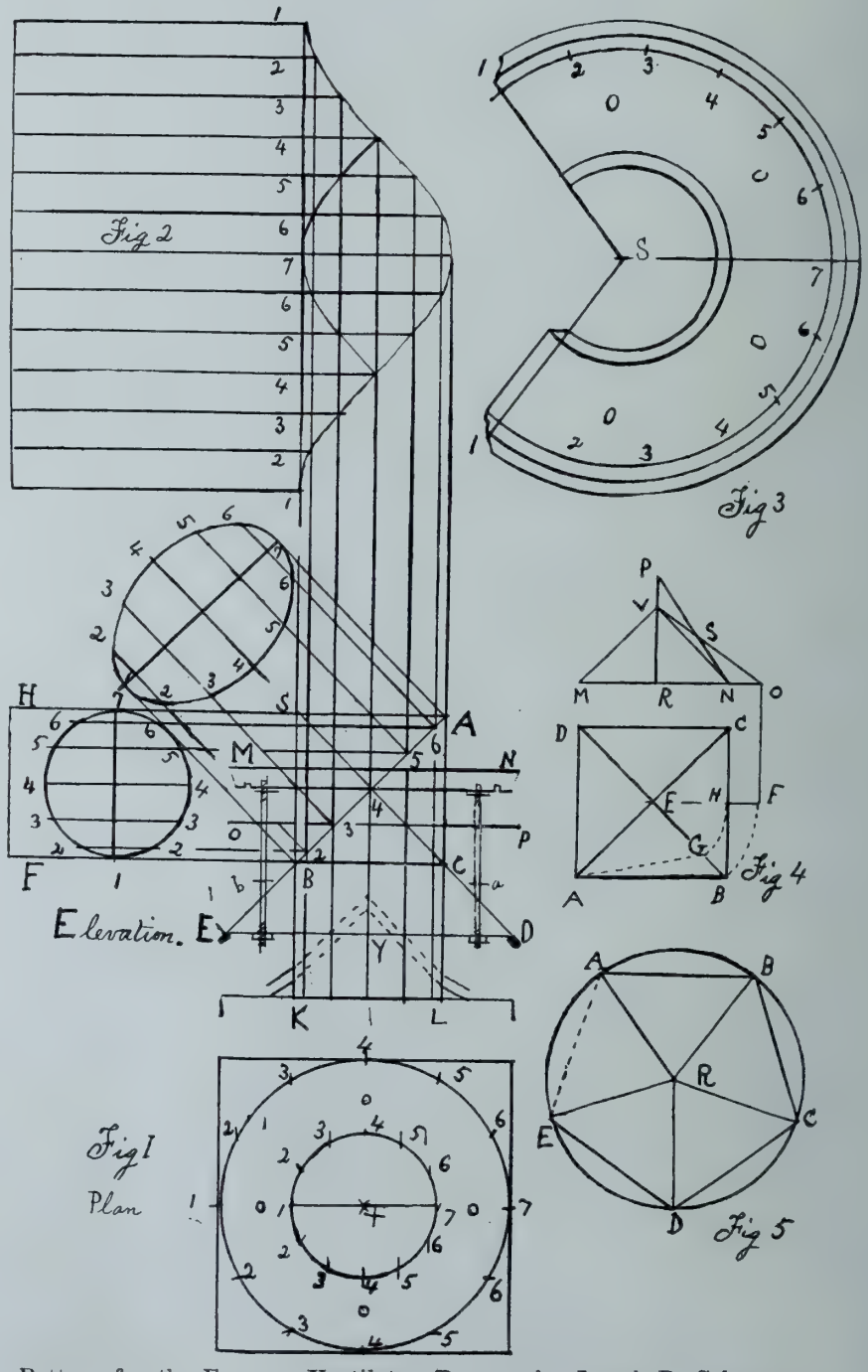
PATTERN FOR THE EMERSON VENTILATOR.

The Emerson Ventilator is a round pipe, surrounded by a circular flange, and a tapering flange extending from the top of the round pipe and connected with the circulating flange. The tapering flange is half pitch, that is, the height of the flange is equal to the projection beyond the side of the pipe. The top flange extends above the top opening of the round pipe exactly one-half the diameter of the pipe. The extreme diameter of the circular flange, tapering flange top flange is always twice the diameter of the round pipe, therefore, each flange extends beyond the side of the round pipe a distance equal to one-half of the diameter of the pipe.

X is the centre of the small circle shown in plan, fig. 1. Take a pair of dividers, space the distance X-1, and from X as a centre point describe the small circle shown in plan, which is divided into twelve parts as indicated by the figures 1-2-3-4-5-6-7, 6-5-4-3-2. Now take the distance X-7 and from X as a centre point describe the large circle, which is also divided into twelve equal parts as indicated by the figures 1-2-3-4-5-6-7, 6-5-4-3-2.

Draw the square shown outside the large circle. The square indicates the flange at base of ventilator. The large circle shows the extreme diameter of the circular flange E D, tapering flange E D and the flat circular top M N, which are shown in elevation.

To construct the elevation, draw the square indicated by the letters K, L, B, C, which represents the elevation of the round pipe. The line B C is the top of the pipe, the line K L is the base. The line K L extended shows the flange at the base of pipe. Draw the indefinite line Y-4, cutting centre of the line B C, and from the centre of the line B C space a distance to 4 and Y equal to one-half the diameter of the pipe. Through Y draw the indefinite line, and from point Y space on this line a distance equal to the diameter of the pipe giving points E and D. Draw a straight line from E to 4 passing through point B, and a straight line from D to 4 passing through point C. The distance from Y to 4 is equal to Y E or Y D, therefore the lines E B and C D, which indicate both the slant and the true length of the tapering flange, are drawn at half pitch or an angle of 45 degrees in elevation. The opening from line B C to the under side of the top flange is always one-half the diameter of the pipe when only one flange is used. Sometimes a double flange is used, as indicated by the straight line O P, then the opening is six-tenths the diameter of the pipe. For example, if the diameter of the pipe is ten inches, the opening would be five inches for a single flange and six inches when double flanges are used. The flat top of small ventilators were made of galvanized iron No. 22, firmly secured in place, being soldered to three-eighth iron rods, which passed through the centre of the tapering flange and were soldered to flange E D. The top of large ventilators was made of flooring covered with bright tin. Half-inch iron rods with threads were screwed to the under side of the flat top as shown in the drawing,



Pattern for the Emerson Ventilator, Dr awn by Joseph P. Coleman.

passing through the tapering flange and circular flange. A nut was screwed on the bottom of rod. A short tube was fastened to the circular base E D and extended above the tapering flange as shown by small a-b. A washer is soldered on the rod, to rest on the top of the short tube as shown at a-b. A groove was cut on the under side of flooring a short distance from the edge, to form a drip as shown.

How to Lay Out the Pattern.

Set the dividers to the distance 4 E, and from S, fig. 3, as a centre point, describe an arc of a circle. Through point S draw an indefinite straight line; where the line crosses the arc of the circle mark point 7. Set the dividers to the distance between any two consecutive points in the large circle, fig. 1 plan, and from point 7, space six points on each side, measuring on the arc of the circle, numbering the points 6 5-4, 3-2-1 on each side as shown. Draw straight lines connecting the extreme points 1-1 with the centre point S. Set the dividers to the distance 4 B, Fig. 1, elevation and from S as a centre point describe an arc of a circle, cutting the straight lines previously drawn from points 1-1 to S. Also describe the smaller curve which is used as a flange to solder inside the top of the pipe. Describe the two flanges at base of pattern, which are used to connect the tapering flange to circular flange as shown. Allow a lap to rivet the tapering flange together. The oblong holes for the four rods are shown on drawing, fig. 3. In the elevation of fig. 1 you will see two short tubes near the base K L, which are provided to carry off condensation and any rain which might blow in the ventilator. The dotted lines show an inside gutter about an inch wide, which is soldered inside the ventilator. One-half the elbow pattern, fig. 2, is the pattern for the gutter. The circular flange E D has a small edge to connect with the round pipe and is soldered to it, also a small edge is turned down to the bevel of the tapering flange and connected with it.

To Obtain the Elbow Pattern.

Extend the line B C to F in the elevation of fig. 1, also extend line L C indefinite. Make F H perpendicular to F B and in length equal to K L. Make line C A in length equal to F H. Now join H A. Extend the straight line E-4 to A. The drawing as constructed shows F H B A as the horizontal pipe, and B K L A as the vertical pipe, joined so as to form a right angle or a square elbow. A B is the mitre line. In the horizontal pipe, H A F B, describe a circle as shown and divide into points 1-2-3-4-5-6-7. 5-4-3-2. Through the points of division draw parallel lines parallel to H A, intersecting the mitre line AB in points B 2-3, 4-5, 6A. From point B and perpendicular to line F B draw an outstretch line indefinite. On the outstretch line space off the points of division, 1-2-3, 4-5-6-7-6-5. 4-3-2-1, to correspond in length to the points on the circle shown in the horizontal pipe, H A F B. Through the points on the outstretch line draw lines perpendicular to the outstretch line forming a pattern sheet. Where the outstretch line intersects H A, mark point S. Now if you are not using a drawing board, you can lay out the points to form the pattern in this manner: Take a dividers. Set one point always on line B S. Extend the other point to point A. Space this distance from point 7 in pattern sheet, measuring from the outstretch line. Now take the distance of line 6 in elevation and space from lines 6-6 on each side of line 7, which is a centre line. Take the distance of line 5 and space on line 5-5 in pattern sheet. Measure the remaining distance 4-3-2 from line B S to mitre line and space those distances on the lines 4-3, 2 on each side of the pattern sheet. Lines traced through the points give the required form of the square elbow pattern as shown. In the original drawing from which this plate was made, the circle was laid out one and three-quarter inches in size, for the reason the circumference is already known without spacing the points of division on the circle. Any circle seven inches in diameter is twenty-two inches circumference; therefore a circle one and three-quarters inches diameter is exactly five and one-half inches circumference. In laying out an elbow pattern always have a point of division at each quadrant, as 3-4, and at the diameter, as 1-7, for the reason that the length of the line at point 4 is exactly one-half the length of the line spaced from point 7 in the pattern.

The Tee-joint Pattern.

The lines K S and L A extended form the outlines of a vertical pipe, the small circle in plan is the base. The Tee-pipe is represented by H S F B. The intersection between the pipes is shown by points B 2, 3, 4, and the line 4 S, forming a right angle. In this problem there are four points of division of equal length from the measuring line B S. Points 3 3, 5 5, two on the upper surface of the pipe, and two on the lower surface, are of equal length from line B S to mitre lines. Therefore in the pattern sheet space the distance measured from 3 on the lines numbered 5 on each side of the pattern, and the distance measured from 2 on the lines numbered 6 on each side of the pattern. The elbow pattern is one-half the tee joint pattern; trace lines through the points to obtain the complete tee joint pattern as shown.

Pattern for a Square Pyramid.

The plan of the pyramid (Fig. 4) is the square A B C D. Draw the diagonal lines A C and B D. The pyramid in the elevation is shown by M N V; the perpendicular height is R V. Set the dividers at point E in the plan and within the distance E B describe an arc to F on the line E F. Extend the line M N indefinite and from point F draw a line parallel to B C, meeting the indefinite line at point O. Join O V. Extend the line R V and make R P in length equal to M V. Join N P. Set the dividers at E in plan. With the distance E H describe an arc of a circle intersecting line E B at point G. Draw the dotted line A G. The lines A G, V O and N P are of equal length. Either line is the true length of the hip of the pyramid, therefore take the length of either in the dividers and from R as a centre point, fig. 5, describe a circle. Space the distance A B taken from the side of the square and divide the circle into five equal parts. Through the points draw lines to the centre R and also lines joining the points forming a pentagon. A pentagon has five triangles. Take one triangle away. The four remaining as A B C D E is the form of the required pattern.

DISSATISFACTION OVER TENDERS.

Considerable dissatisfaction has been expressed by Toronto master plumbers at the stand taken by the civic authorities in naming as a standard for plumbing work on the new Harrison baths and public comfort station at Queen and Broadview streets, the products of an American enamelware manufacturer. While it is true that the specifications allow of tenders being made on goods of Canadian make if of equal standard, instances are quoted of where Canadian firms have guaranteed to supply goods of equal standard and their tenders have been turned down by the civic officials.

The Plumber and Steamfitter does not take the position that goods required should be selected because they are "Made in Canada." It would object if only one Canadian manufacturer was given preference. Canadian and American manufacturers should be given an opportunity of tendering on public works on terms which are fair alike to both.

The chief object in calling for tenders is to secure a competitive price and where tenders are called for in such a manner that only one or two firms can meet the requirements a monopoly is created and competition is destroyed. And if fair treatment is not meted out to Canadian manufacturers how are they to ever reach the standard of manufacture reached by older concerns across the line?

Let all be treated alike.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Anclair & Vallee, plumbers, Montreal, have dissolved.

Ouellette & Larose, plumbers, Montreal, have dissolved.

Davis & Dunbar, plumbers, Fort William, have dissolved.

Chapleau & Lebeau, plumbers, Montreal, have dissolved.

Lefebvre & Ranger, plumbers, Ville St. Pierre, Que., have dissolved.

The assets of T. Fleury, plumber, St. Joseph, Que., were sold on Oct. 21.

The assets of J. E. P. Gagne, plumber, Chambly Basin, Que., have been sold.

The Allen Schofield Co., dealers in brass goods, Montreal, have received a charter.

Regina's water rate will be reduced 10 cents a gallon. The new rate will now be 25 cents for 5,000 gallons.

Brockville will engage an expert engineer to make a thorough investigation of the water supply, which of late has been bad.

F. S. Walker, plumber, St. John, purchased at auction recently the ferry steamer Quangandy, which was sold by that city.

The brass fixtures to be used in the new Trust and Loan Co.'s building at Montreal will be supplied by the Robt. Mitchell Co.

Saxe & Archibald, have awarded the contract for the heating of the building for Thos. Robinson, Montreal, to W. J. McGuire & Co.

Phillip J. Turner, Montreal, has awarded the contract for the heating of the Chateau Beauclaire, at St. Lambert, to Hickey & Aubut.

R. Mackay Fripp has let the contract for heating the greenhouses at his place at Burnaby, B.C., to the Vanstone Heating Co. for $2,000.

The contractors on the new Lufkin Rule Co.'s building at Windsor are: Plumbing, J. E. Purser & Son; roofing and tinning, P. Dresch.

G. A. Monette, Montreal, is inviting tenders for the electric wiring of two school buildings for the Catholic School Commissioners at that city.

Bert Lennox, of the Lennox Hardware Co., Winnipeg, has been compelled to give all his time of late to the plumbing and heating end of the business.

Alphonse Venne, Montreal, has awarded the contract for heating and roofing the Desaulniers' residence at St. Lambert, to Hector Trudeau, St. Lambert.

J. J. McNeely, Chatham, N.B., at $2,000, secured the contract for plumbing in the new residence about to be erected for a wealthy New Yorker at Pratt's Lake.

The contracts for the heating, plumbing and electric wiring of the Peel-Halton House of Refuge at Georgetown, have been awarded to Higgins & Large and J. McMurchy, respectively.

Portage la Prairie, Man., ratepayers have approved a by-law granting the Western Radiators, Ltd., a fixed assessment for 20 years. The company will immediately proceed with the erection and equipment of a large plant.

The National Electric Heating Co., a new concern, under the management of A. Pritzker, Toronto, will on November 1 commence the manufacturing of electric soldering irons and other electric heating lines at Galt, using the same building as the Canadian Tap and Die Co.

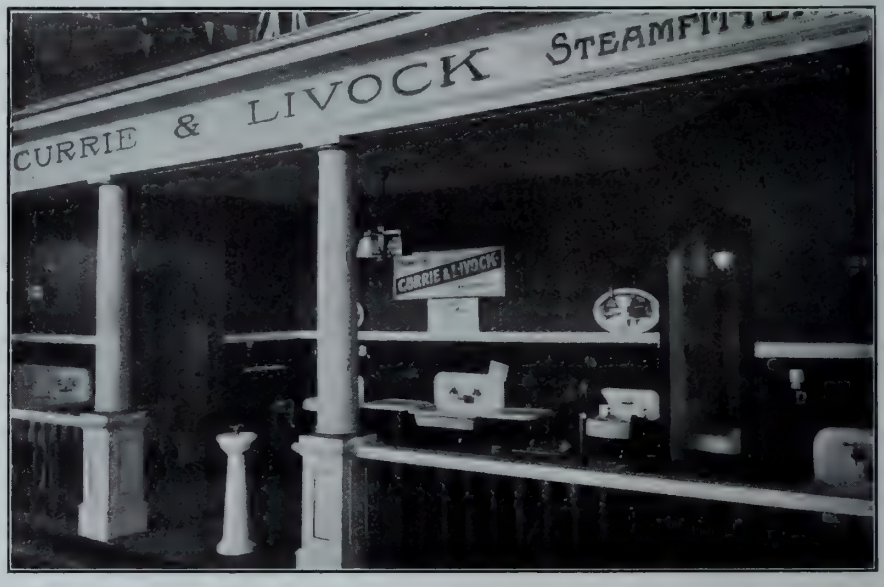
A. W. Humphries & Son, Parkhill, have on hand contracts for installing the plumbing in the new post office there, the residence of Rev. Father Foster, at Mt. Carmel, and the residence of S. E. Couzens, Parkhill. Their workmen are this week putting the galvanized iron cornice work and roof on the new Government buildings in Parkhill.

The Delora Mining Co., of Hastings County, have entrusted the contract for heating their large new boarding house to the F. J. R. MacPherson Co., Peterboro. This contract calls for a large amount of work, no less than sixty-five radiators being required on the job. The work has already been commenced as it must be completed before the cold weather sets in.

The Sterling Electric Supply Co., with a capital of $25,000, and headquarters at Toronto, has received an Ontario charter to carry on a general electrical supply business; to manufacture electric supplies and fittings, and to construct works and plants for the development of heat, light and power. The provisional directors are A. G. Manly, R. W. Strickland and P. W. Greene.

EXHIBIT OF PLUMBING GOODS.

The Plumber and Steamfitter has received a number of photographs of displays made at fall exhibitions by master plumbers in all parts of Canada. It has been found impossible to use all of these, however, as several were displays of stoves, etc., which were straight advertisements for the manufacturers.



Currie & Livock's Plumbing Display at Ottawa Exhibition.

One received last week, however, from Currie & Livock, Ottawa, reproduced herewith, is in a different class, and we are glad to be able to present it to readers of Plumber and Steamfitter, as it presents ideas worthy of being copied by other firms, not only in displays at fall fairs, but in plumbing shops the year round.

The booth itself is artistic and of permanent construction, with an interior wall and ceiling decoration calculated to appeal to the most cultured people. The drinking fountain at the entrance is modern and certain to attract attention. Then the laundry tubs, wall lavatories, kitchen sinks, plate glass mirrors, bath room fittings, desk, wall and ceiling light-

ing fixtures, will hold and increase the interest developed in the minds of possible home builders. And as a final work or clinching argument, there are two model bathrooms, which, judging from the glimpse given in the photo, are beautifully fitted up with tiled wall and everything that is up-to-date. The entire exhibit is homelike and not overdone.

If it pays a plumbing firm to make such a display for a few days or a week at a fall exhibition the expenditure of a couple of hundred dollars in fitting up a good window and shop display to be maintained all the year, will surely pay any master plumber looking for contract work. Of course if a plumber is merely looking for repair jobs such an expenditure would be waste money.

A. H. Currie and James Livock, since they assumed control of the Thompson & Livock business, two and a half years ago, have built up a reputation worthy of a first class trade, and are enjoying a large patronage. The premises occupied at 104 Bank Street, are replete with every facility and appliance for the successful prosecution of the business and a large staff of hands are employed.

PLUMBING AND HEATING PATENTS.

The following is a list of patents issued by the Canadian Patent Office on Oct. 1, 1909, relating to plumbers' and steamfitters' appliances, and furnished by Fetherstonhaugh & Co., 5 Elgin St., Ottawa :—

120955. C. Schultz, Buffalo, N. Y., compound for treating and purifying water.

120988. C. B. Edler, Toronto, compounds for the removal of scale in steam boilers and preservation of same.

120991. C. J. Zillgitt, W. K. Stebbins, Fairmont, N.D., check valves.

121998. H. R. Sheppard, E. A. Gesler, Greensbury, Pa., gas burners.

121008. J. D. Beachtel, Clyde, Kansas, thimbles for boiler flues.

121027. F. J. Farr, Twining, Mich., attachments for burners.

121031. W. B. Ford, Decatur, Ill., pipe tapping machines.

121046. H. S. Lange, Christiania, Norway, valves for hydrants, stand pipes.

121048. C. W. Merrill, Alameda, Cal., pressure filters.

121067. D. W. Robb, Amherst, N.S., steam generators.

121120. J. W. Currie, Minneapolis, feed water heaters.

121125. J. Deam, Pendleton, Manchester, Eng., boilers or steam generators.

121138. F. Gremmels, Mannheim, Germany, sectional boilers.

TALES OF THE TRADE

GEO. WILSON JOINS BENEDICTS.

George T. Wilson, who covers the north country for the Dominion Radiator Co., and covers it well, be it said, undertook to write up the biggest contract of his life at Owen Sound last Tuesday. George is a cool customer and has the reputation of being able to figure out a puzzling heating contract without getting rattled, and he is sufficiently sanctimonious-looking to indicate that he isn't altogether unfamiliar with the appearance of church interiors, but notwithstanding this, he had his trouble in maintaining his composure when standing before Rev. J. T. C. Morris, on October 26, and saying the words which completed the wedding contract between

WAITING AT THE CHURCH,
A Snapshot Taken by J. E. Farrell, at North Bay, Before George Wilson "Tied up."

Miss Carrie Sitzer, of Owen Sound, and himself.

George is an experienced traveler, but one of his many friends says he didn't altogether appreciate the marked attention paid to his bride and himself at the station and on the train, so, knowing one of the train hands, a jolly and well-intentioned Irishman, he said: "Jerry, I notice everyone is sizing us up and having lots of fun about us. You haven't been telling them that we're just married, have you?" "What, me tell them!" said Jerry. "No, and if anyone tries to get anything out of me, I'll tell them you aren't married at all."

Mr. and Mrs. Wilson will make their home at 182 Sorauren Avenue, Toronto, and when sitting in his den smoking his pipe or studying his Sunday school lesson, he will be reminded of his weekday associates, the Dominion Radiator staff having presented him with a set of mission furniture as a wedding present.

HELPING A STREET FAKIR.

A good story is told on Lou Martin, one of the traveling representatives of the James Robertson Co., Toronto.

He was in Hamilton one night not long ago, and while out for a stroll with a couple of other gripmen, he stopped to listen to a street fakir who was demonstrating a new method of sewing buttons on pants, and selling a package of needles, thread, etc., for 25 cents.

One of the boys urged Lou to buy, but he wasn't anxious to do so. His friend, however, passed him a coin, saying, "Here's a shilling, buy one of the packages and see if we can't start some fun going." Urged thusly, Lou bought and passed over the coin without looking at it, only to find that he had been the victim of a joke, the coin being a Canadian copper, instead of its twin in size, a 25-cent piece.

The fun developed all right, as Lou acknowledged he was "stung," and he asked the boys over to a near-by soda fountain.

To put a new furnace in an old building is no easy task. Often it is very unsatisfactory to both plumber and the maker of the furnace and its accessories. However, a most satisfactory installation was made in Montreal this summer in this way. A No. 7 Gurney-Tilden furnace for heating and No. 4 hot water boiler were recently installed successfully in an old row of flats on Tupper street. The cellar had to be first dug out and cemented to make sure of a base. Then the old cellar walls of ten different houses had to be broken so as to insert piping. The difficulty of accomplishing this work while the flats were all occupied and while many of the tenants were away for the summer may well be imagined. Then plumbers alone knew what they have to suffer in such work. The house occupants have an idea that pipes may be connected, radiators put in place and joints sealed without making a speck of dirt in the parlor or kitchen. Just ask A. Mackenzie, 105 Metcalfe, St., Montreal, what he thinks of such a job. He is a patient hardworking Scotchman, but Mack says he would not undertake another such job if it were to buy a world of happy days.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Public Buildings.

A post office is to be erected at Tiltson, Man.

A $13,000 high school will be built at Yorkton, Sask.

A new fire hall to cost $13,600 will be built at Ottawa.

A new school, to cost $7,000, will be built at Starbuck, Man.

The erection of an isolation hospital at Stratford is under discussion.

Vancouver's city council is considering the building of a new city hall.

A new Anglican church is to be built in Grandview, B.C., to cost $2,000.

St. Andrew's municipality (Winnipeg) will erect a new municipal building.

The Brantford public school board is looking for a site for a new school.

McGill University, Montreal, will build a new museum, at a cost of $90,000.

New police quarters, to cost $40,000, are proposed to be built at Hamilton.

City and Galt Hospital Trustees, Lethbridge, will build a new hospital, to cost $60,000.

The N. B. Provincial Government may soon establish a tuberculosis sanitarium at St. John.

Guelph ratepayers will vote on a by-law to raise $25,000 for the building of a new school.

A new theatre, which will cost about $100,000, will shortly be erected at Chatham, Ont.

The Toronto Board of Education are erecting a $40,000 school on Avenue Road, that city.

It is announced that the Schuberts, of New York, will build a theatre at Vancouver this fall.

The Pantages Theatre Co. have decided to erect at Victoria a new theatre, at a cost of $40,000.

Plans have been approved for the $1,500,000 extension to the C.P.R. Windsor station at Montreal.

The Ottawa Public School Board is purchasing a site on Breeze Hill for the erection of a new school.

The Roman Catholic church will erect a $30,000 edifice in Saskatoon, the foundation to be in this fall.

Simoneau & Dion have been given the contract for building the Quebec technical school, for $233,800.

The Berlin Park Board will ask the town council to build a public comfort station, at a cost of $7,000.

The Brantford school board is considering the question of erecting one or two schools early next year.

Plans will be at once drawn up for new G.T.R. terminals at Montreal, on the site of the present structure.

A by-law to raise $15,000 for additions to public schools will shortly be submitted to the Penetang ratepayers.

Land has been purchased in Hastings townsite (Vancouver) with a view to the erection of an isolation hospital.

Brandon ratepayers will vote on a by-law to raise $13,000 for the purpose of extending the Winter Fair building.

The Fort Rouge Congregational church, Winnipeg, has taken out a permit for the erection of a new church.

A site has been purchased by the Annex Baptist congregation at Montreal, for the erection of their new church.

A by-law to raise $25,000 for the erection of a new school building will be submitted to the Meaford ratepayers.

A site has been purchased at Regina by Whitmore Brothers, upon which they will at once proceed to erect a theatre.

A by-law will shortly be submitted to the Yorkton, Sask., ratepayers to raise $16,000 debentures for school purposes.

Brandon ratepayers will vote on a by-law to issue $13,000 debentures for the purpose of erecting a market building.

The Catholic church recently destroyed by fire at the town of St. Paul, Que., will be rebuilt at the earliest opportunity.

The Edmonton city council have accepted plans for a market building and will submit a by-law for the necessary amount.

The Toronto Board of Education has taken out a permit for a two-storey brick Girls' Home, to be erected at a cost of $15,000.

E. & W. S. Maxwell, Montreal, have prepared plans and are inviting tenders for an addition to the Alexandria hospital there.

A new public school, to cost $13,000, and a new separate school, to cost $5,500, are new buildings to be erected at Vonda, Sask.

Tenders addressed to W. G. Wilson, county clerk, will be received until November 2 for steam heating the Napanee court house.

A permit has been granted for a new $40,000 grand stand at Hanlan's Point, Toronto, to replace the one destroyed in the recent fire.

The School Commissionsers of Westmount are considering the advisability of adding to the King's and Rosslyn school buildings.

The Edinger-Nesbitt Construction Co., of Edmonton, secured the contract to build the new public school at Tofield, Alta., for $9,000.

St. Mary's College, Montreal, has purchased a block of land in Cote des Neiges, where they will ultimately erect a large building.

Plans for the new addition to the Isolation hospital are ready and will shortly be submitted to the Toronto Board of Control.

A by-law to raise $320,000 for new permanent buildings on the Toronto Exhibition grounds will be submitted to the ratepayers on January 1 next.

It is learned that work on the new $100,000 hospital to be erected by the Grey Nuns at Regina, will be commenced as soon as the trunk sewer is down.

Contracts have been awarded for the building at Toronto of the Jones Avenue public school, $54,886, to Chas. Bulley, and the Logan Avenue school, $39,534, to H. Needham.

At a recent meeting of the Burnaby, B.C., municipal council the contract for the additional offices to the municipal hall was awarded to Bowden & Hardwick, at $1,200.

L. R. Montbriant, Montreal, is preparing plans and specifications, tenders for which are invited, for the erection of the Saint Jean Baptiste school, in Montreal Annex.

The contract for the Old Folks' Home, to be erected at Middle Church (Winnipeg) has been awarded to S. Brynjolfsson & Co., at a figure in the neighborhood of $25,000.

The special committee appointed by the counties of Lanark, Renfrew and Carleton, are to choose a site for a tuberculosis hospital for joint use of the three Ontario counties.

J. E. Coulter, Woodstock, has been awarded the contract for the erection of the Hamilton Carnegie library. The amount of the tender was $8,590. Work will be commenced this fall.

L. C. Gilman, assistant president of the Grank Trunk, has submitted to the Vancouver city counicl plans for the construction of a union passenger station and joint freight terminals.

A company, comprised of H. E. Penny, Rev. R. S. Cushing, Dr. O. Dorman and others, intend to erect a public hall and swimming bath in Weston (Winnipeg). It is stated that work will be commenced shortly.

It is proposed to have a new and modern market on a new site at Brantford and to have new Government and city buildings combined on the present market square. The latter is estimated to cost $250,000.

The Board of Trustees of the General and Marine Hospital, Owen Sound, has decided to build an addition to their institution. The annex will cost between $12,000 and $15,000, and will double the present accommodation.

The congregation of Bonar Presbyterian Church, Toronto, authorized an architect to draw up plans for a church to cost $40,000, with a seating capacity of 1,000. Work upon the new edifice is expected to commence early next spring and the building to be completed in a year's time.

Municipal Undertakings.

Work has commenced on Hull's waterworks extensions.

The money by-law for waterworks at Nanaimo was passed.

Hamilton's proposed sewage disposal plant will cost $110,000.

Hamilton's proposed sewage disposal plant is estimated to cost $110,000.

A by-law has been passed at Bridgeburg, to establish a sewerage system.

Weston, Ont., will expend $57,000 for the construction of a waterworks system.

The Yellow Grass, Sask., waterworks system is rapidly approaching completion.

J. & T. Riley have been given the contract for sewers at St. Catharines at $830.

A large boarding residence for E. J. Rochon, Winnipeg, will be built at Fort William.

A $30,000 apartment house for J. V. and George E. Lightheart will be built at Vancouver.

I. Bilodeau received the contract, at 90 cents a foot, to replace some water pipes at Quebec.

Nanaimo, B.C., ratepayers have approved a by-law to issue $30,000 waterworks debentures.

On October 18 a by-law will be voted on at Arcola, Sask., to issue $15,000 waterworks debentures.

Portage la Prairie ratepayers will shortly vote on a by-law to raise $17,500 for waterworks.

The Montreal roads committee is asking for $50,000 for another section of the Sherbrooke street sewer.

A by-law to issue $7,000 waterworks debentures has been carried by the ratepayers of Markdale, Ont.

Tenders are being called by the Campbellton, Ont., council for the extension of sewers along George Street.

Extensions to Vernon's (B.C.) waterworks and sewage systems will be pushed forward before winter sets in.

The Edmonton city council has taken out a permit for the electric power plant and waterworks, to cost $39,000.

Tenders are invited for a supply of pipe, 42 inches in diameter, to cost about $64,000, for Ottawa's waterworks.

Brantford military men state that a new armory for the 25th Brant County Dragoons will be erected next spring.

The contract for building the new convent school at Ladysmith has been awarded to John Avery, of Victoria.

The by-law authorizing the installation of a municipal water system has been passed by the Trail, B.C. ratepayers.

The tender of Carriere & Wilson for the excavations of the Hull waterworks extension, at $22,000, has been accepted.

The contract for the construction of the main sewer at Hull was awarded to G. F. Martin, of Smith's Falls, for $38,697.

J. H. B. Rickaby received a $40,000 contract for the supply of 87,500 feet of steel tubes for the Victoria waterworks system.

The arrival of pipe will help the pushing through of the waterworks extensions at Port Arthur before the end of the year.

On October 18, Galt ratepayers will vote on a by-law to raise $5,000 by debentures for the extension of the waterworks system.

A. P. Burns, of Medicine Hat, has been awarded the contract for building about five miles of sewers at Maple Creek, Sask.

The Perth, Ont., town council have awarded the contract for sewer work to Mr. Haggarty, of Brockville, Ont., for the sum of $3,400.

The municipality of St. Pierre (Montreal) has awarded the contract for the laying of sewers for the amount of $61,000 to J. Henault.

A Dauphin, Man., delegation has been inspecting the waterworks plants in the west, preparatory to planning a system for their own town.

At a recent meeting of the St. Catharines City Council the necessity of another waterworks main from the reservoir to the city was discussed.

A Dauphin, Man., civic delegation is looking over various waterworks plants in the west, with a view to establishing a similar one in that city.

L. C. McDonald, Grand Forks, B.C., has ben awarded contract by New Westminster to supply steel piping for the new municipal reservoir, at $218,527.

The water pipes for the new distribution system in the municipality of Oak Bay, B.C., have arrived, and the council have decided to lay them by day labor.

The National Iron Works, Toronto, received the contract for 1,080 lengths of 16-inch cast iron water pipes, at $27.45 per length, from the civic authorities of that city.

Tenders addressed to O. Ellwood, will be received until October 18 for the furnishing of material and laying of 18-inch cast iron water mains for London's waterworks system.

It is expected that tenders for the proposed new septic tank and filter for the Cobalt disposal plant will be called for shortly, though work on these will not start until next spring.

There is a probability of a waterworks system for Lumsden, Sask., early next year. There is said to be an unlimited supply of water on the hillsides on the north side of the town.

The reconstruction of the entire sewerage system in the central section of Vancouver was forecast by the expressions of opinion given at a board of works meeting recently.

City Engineer Ker, of Ottawa, is preparing plans for the drainage of the western end of Hintonburg, at an estimated cost of $150,000. The work will commence early next season.

By a practically unanimous vote the ratepayers in Richmond municipality have decided that Lulu island is to have the Vancouver water system extended through that district.

A British concern, represented in British Columbia by J. H. B. Rickaby, got the contract to supply 87,500 feet of pipe for Victoria's waterworks system, at $40,000.

At a recent meeting of the Montreal Road Committee, tenders were opened for the construction of a sewer on Eighth avenue, Rosemount. The contract was awarded to Mr. Denis at $9,982.

The Verdun, Que., town council has awarded the contract for the extensions to the waterworks buildings, to be utilized as accommodation for the electrical department, for $3,774, to Isaac Collins.

The provincial board of health of Manitoba has recommended that the Clifton Street sewer, which the City of Winnipeg proposes to construct to empty into the Assiniboine river, be proceeded with.

The plans for the new Brantford Y. M.C.A. have been revised, and the general secretary states that the proposed new building will cost about $100,000. The plumbing contract will be a large one.

A joint committee, appointed by the St. John city and county councils, has been appointed to report on a project for erecting a new building for city, county and local government and court offices.

W. Beverly Robinson, Montreal, agent for the Stanton Iron Works, Nottingham, Eng., has been awarded the contract for the supplying Winnipeg with cast iron pipe at $49,000, a much lower figure than any other tender.

The National Iron Works Co., Toronto, put in the lowest tender and received the contract to supply Toronto with pipe for waterworks purposes. The contract calls for 1,080 lengths of 16-inch cast iron pipe at $27.45 per length, to be delivered next spring.

Col. T. H. Tracy, Victoria, formerly city engineer of Vancouver, has returned from Nanaimo, where he supervised the instalation of the water system, whereby water is brought twelve miles into the city. The system is now in operation, and is running successfully. It cost about $100,000.

The Ottawa civic waterworks committee has authorized the city engineer to go ahead with the work of laying the new clear or drinking water pipe from the end of the new aqueduct to the intake at Nepean Bay. It will be about a mile in length, will be 42 inches inside diameter and will cost about $64,000. Tenders for the pipe will be called for at once.

The council of Exeter, Ont., have adopted the report and plans prepared by F. W. Farncomb, of London, for a system of waterworks, which for the present will be for fire service only. The estimated cost is $25,000. This will include a pumping plant with a capacity of half a million gallons a day, a main along Main Street, with provision for future extensions, also an elevated storage tank, with sufficient capacity for two days' supply for the town. The present supply will be drawn from the river.

PLUMBING AND HEATING MARKETS

MONTREAL.

October 30.—Great trade activity is reported in all lines. Not only is the demand for immediate requirements heavier, but there is the usual amount of stocking up, being done by consumers, at outside points preparatory to the closing of navigation. Soil and iron pipe are still going out in large quantities, and manufacturers report no letting up in the pressure on their plants. The same thing is also occurring in enamelware.

There is plenty of plumbing work doing, as builders are rushing jobs to get them finished before the snow comes. Very few shops are not working overtime, and it can be imagined that supply houses are very busy. The general opinion is that a continuance of the demand for another month or so will make the year's trading much above the normal.

No changes are announced in the markets, with the exception of an advance of 50c in second grade baths. Brass prices in most cases have not been changed, and it is believed that no general advance will take place before the beginning of the year. The advance in iron pipe has not noticeably checked the demand, There is a good tone all the way round.

SOIL PIPE—The demand is still exceedingly heavy, and manufacturers have had no relief in the pressure of their plants. Outside points are ordering more freely, owing to the coming close of navigation. No change in prices is announced, although the market is very firm, and we quote light 60 off, medium and extra heavy, 70.

LEAD PIPE—The demand continues very active. More stocking up is noticed, but the greater part of the material is being used at once. The market is firm, and we quote pipe and waste at 27½ off; traps and bends at 50, caulking lead 5c per pound.

SOLDER—The market is firm but unchanged. Orders are coming in freely, not only from jobbing shops, but the larger interests. Quotations keep at 19½c for half-and-half, and 18½c for wiping.

IRON PIPE—The advance in iron pipe has not noticeably checked the demand, as little stocks were carried, and the trade requirements are just as great as ever. Heavier lots are being dispatched to outside points, as is usual at this time of the year. We quote—¼ inch black 63; galvanized 48; ⅜ black 59, galvanized, 44; ½ black 69, galvanized, 59; ⅝ to 4-inch black, 71½, galvanized, 61½.

RADIATORS AND BOILERS—The demand has not let up at all, and manufacturers and jobbers are very hard pressed to give delivery. With building being rushed, the call, if anything, gets heavier as time goes on. We continue to quote: Steam boilers 60 and 10; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 10; steam radiators, 50.10 and 2½ per cent.

ENAMELWARE—Ordering is just as active as ever and manufacturers are hard pressed to supply the jobbers, whose stocks are not heavy. Prices are firm all the way round. Second grade baths have advanced 50c.

SCRAP METAL—Buying has improved a little. There is not a great deal of scrap showing. We quote: Heavy copper and wire, lb., 11c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass, 8c; light brass, 6½c; tea lead, 2¼c; heavy lead, 2½c; scrap zinc, 3c; No. 1 wrought iron, $11; machinery cast scrap, No. 1, $14; stove plate, $11; malleable, $12; miscellaneous scrap steel, $6.

METAL—Buying is still very active, but fluctuations in the primary markets have brought tin and copper down. We now quote: Ingot copper, 14c; ingot tin, 32½c; lead, $3.60.

TORONTO.

October 30.—While all the supply houses state they could handle more business were it coming their way, yet the state of trading at present is satisfactory more especially in the line of enamelware and iron pipe. Master plumbers are all busy with full staffs, and heating engineers say they have just now as much as they can do in the way of installing new work.

The price of popular sizes of enamel baths has advanced about 4 or 5 per cent. Solder is easier, showing a slight decline. All other goods are distinctly firm.

ENAMELWARE—There is a continued big demand for medium grades and sizes, with stock supplies low. This condition has brought about an advance of about 4 or 5 per cent., the increase ranging from 45 cents to 75 cents as the outside figures. The baths affected are sizes 4 feet to 6 feet, with rims 1½ to 3 inches. High class goods hold firm at unchanged prices. Closet combinations are particularly active, as also are sinks. Laundry tubs and sets are fair.

BOILERS AND RADIATORS—Steamfitters have almost more than they can do just at present, so great is the pressure on immediate requirements. The number of radiators going out has been exceptionally great. All parts of the country, particularly the far west, the larger towns between here and the Detroit river, and locally, have been installing hot water and steam heating systems, which have made big demands on boilers and radiators. Prices are unchanged, though the tone of the market is strong. Kitchen boilers hold firm at recent advances.

IRON PIPE AND FITTINGS—The higher prices noted in last issue have not at all acted as a deterrent to business. The smaller sizes of both black and galvanized continue to be favorites, and some pretty fair orders for large sizes have also been placed. 1-inch black is $4.70; and 1-inch galvanized, $6.35. Fittings, both cast iron and malleable, are unchanged.

BRASS GOODS—Business in brass goods is getting better all the time. The strides made in this industry since the beginning of the year are little short of wonderful. The new discount list is not yet ready. The tendency is for a general advance, though the jump will not be a big one.

LEAD PIPE—Taking the month of October as a whole, trading in lead pipe has been good. There was no pressure of orders or work at any time, but the month compared favorably with the several previous ones.

SOIL PIPE—Trading at the moment is but fair. The demand of late has been steady with no special features. Prices hold firm.

SOLDER—Stocks are ample, and there is a slight lessening in demand. Prices are lower on an easy market. The decline, however, is slight—about ½c. Wiping now ranges from 18c to 18½c, and half-and-half 18½ to 19c.

The contract for the foundation of the new St. Micheal's convent, Winnipeg, which will cost $50,000, was awarded to A. E. Bullock, of Brandon.

Recent building permits at Hamilton include: Mills & Hutton, brick addition to Y.M.C.A. building, $37,000; C. R. Reed, brick building, $2,000; F. J. Rastrick & Son, brick dwelling, $2,500; Munro & Mead, brick house, $2,500.

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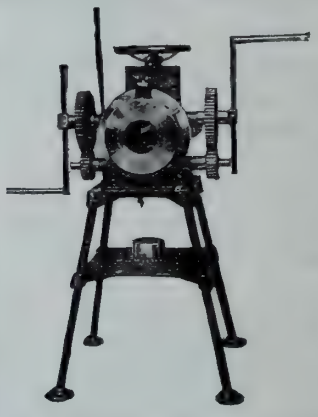

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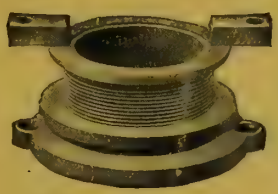

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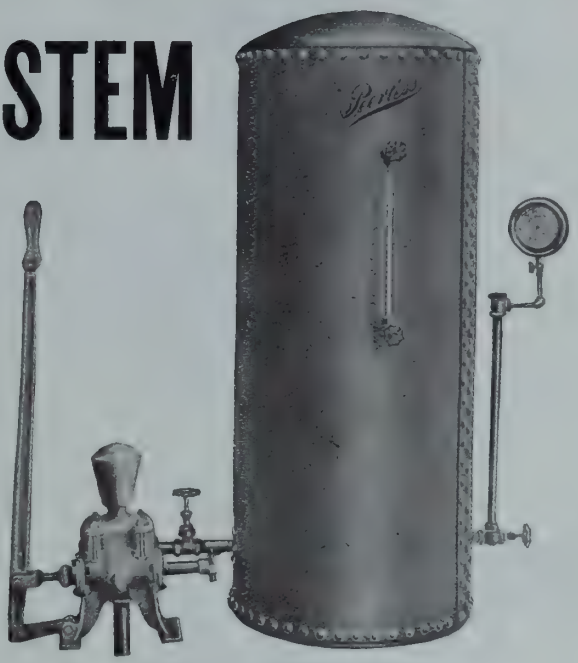

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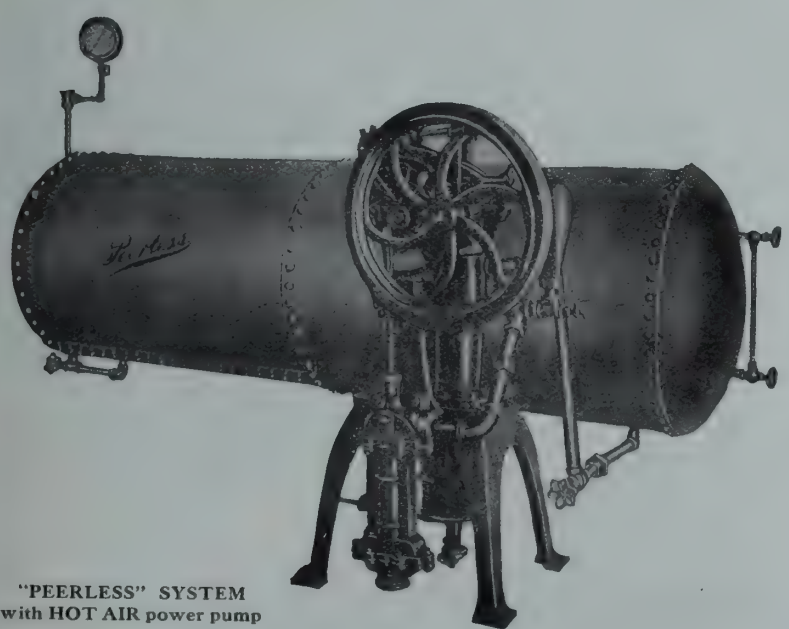

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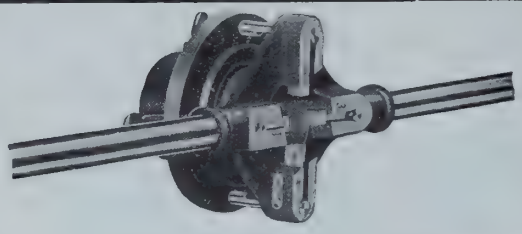

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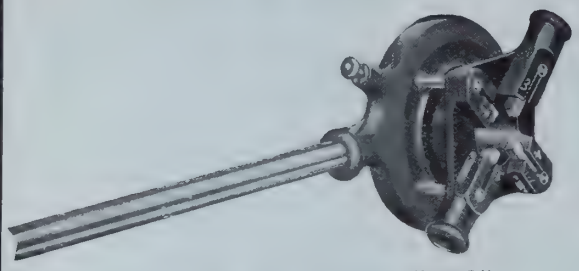

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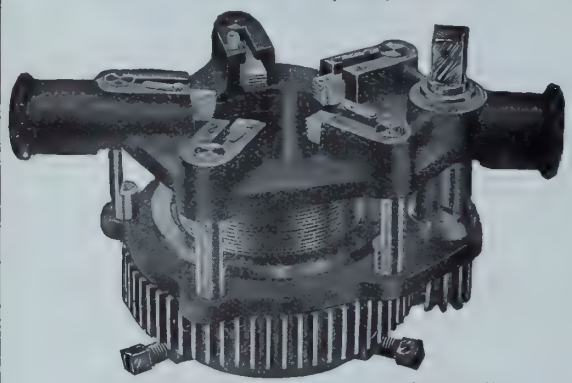

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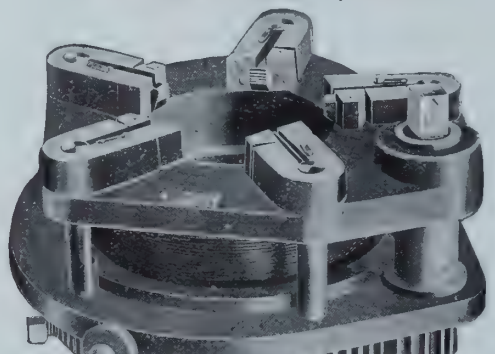

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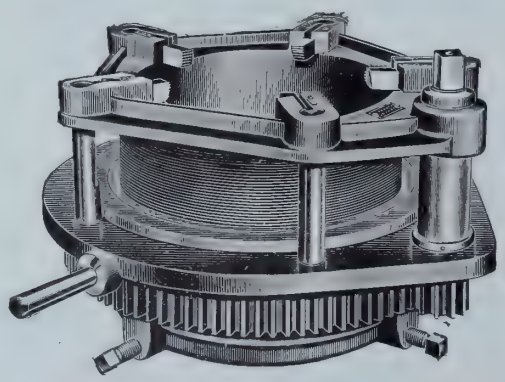

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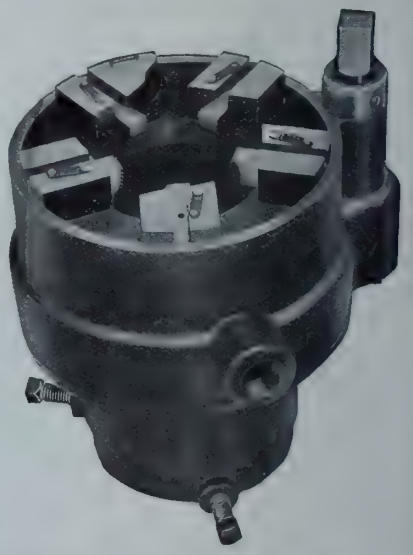

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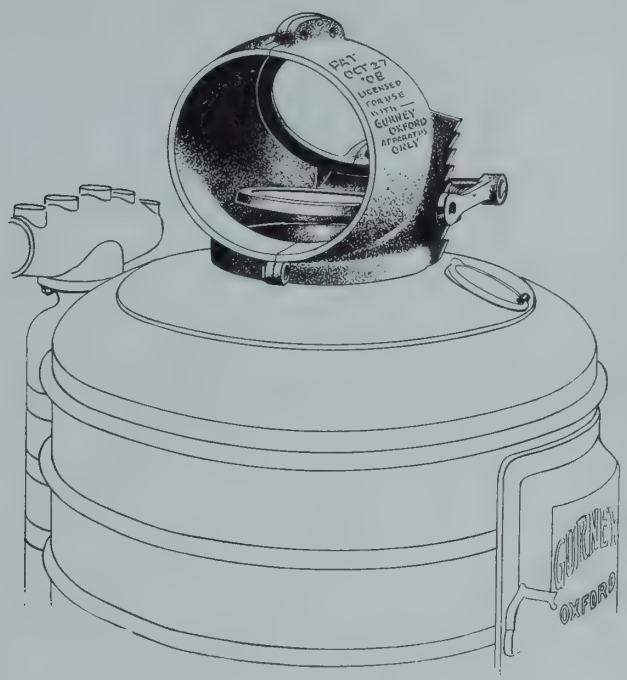

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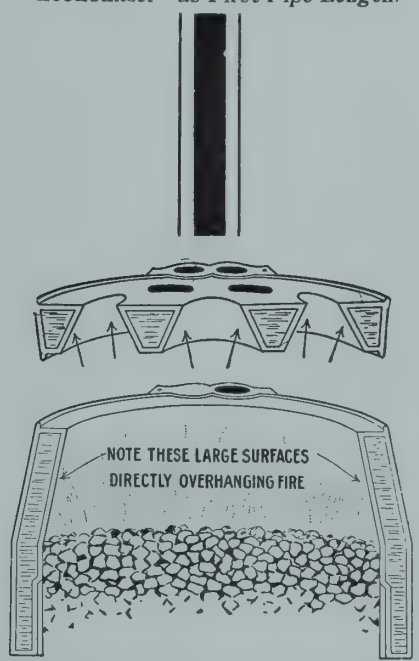

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TORONTO, NOVEMBER 15, 1909

PLUMBER'S LICENSES IN TORONTO.

The Plumber and Steamfitter has frequently referred to the desirability of increasing the plumbers' license fee and establishing a system of examination for master plumbers and journeymen. At present anyone, plumber, blacksmith or pawnbroker, can secure a license by paying a fee of $1, and agreeing to employ competent workmen.

The plumbing inspectors, of course, are supposed to inspect every job done, just as they are supposed to see that only licensed plumbers do work inside the city. But work is done that is not inspected and plumbers who have no licenses do important jobs within gunshot of the City Hall.

The Plumber and Steamfitter has no desire to criticise the staff of plumbing inspectors. They are a staff of hard working men and recognize the faults of the existing system as much as any class of men in the trade. The fault lies with the system—and the master plumbers are largely to blame themselves. Intelligent action on their part would soon bring about a change, but they seem more willing to kick discontentedly than to get together and formulate plans to improve the conditions under which they work. So long as the masters do not bestir themselves the inspectors cannot be expected to do their fighting for them.

In most large cities in the United States, master plumbers and journeymen are called upon to pass an examination and in several cities inspectors are also subject to examinations. In Canada, on the other hand, Calgary is the first city to require all master plumbers and journeymen to pass examinations, the law having gone into effect during the present year. In Victoria and Vancouver an annual license fee of $10 is charged, while in Montreal and Winnipeg the fee is $5.

In Toronto to date 331 master plumbers licenses have been issued, included in these being one departmental store and a large number of hardware merchants, and that Hebrews are becoming large property owners in Toronto is emphasized by the appearance of about a dozen master plumbers belonging to that race. All of these have the right to obtain licenses so long as they do competent work, but it would seem the course of wisdom to require the passing of an examination in order that a standard of workmanship can be set and the plumbing inspectors given more time to see that work is done satisfactorily.

The license fee should also be increased to a point where incompetent men will be deterred from obtaining a license and yet low enough to not act as an obstacle to new firms going into business. The fee should be at least $10 yearly. The present fee of $1 is looked upon as a joke in the trade and cases are frequent where old established firms have failed to take out a license until the year is practically over, while in other cases firms doing a large business neglect to pay one year and when obtaining a license the following year pay for one covering the year before. And reference is made in another column to a daily newspaper which has erected a new building in which considerable plumbing has been installed, the work being done by a plumber who has no shop and who has had no license since 1907.

Dr. Sheard, as medical health officer in charge of matters pertaining to plumbing and sanitation in Toronto, should invite about a dozen representative master plumbers to meet his staff of inspectors and himself to discuss the advisability of establishing a system of examinations for master plumbers and journeymen. The police commissioners have control of the issuance of licenses, and this matter might also be taken up with the license clerk as a recommendation from a committee of master plumbers or inspectors would likely be acted upon favorably, especially if endorsed by the license clerk.

The time to act is now, before another year opens. Three years ago there were only about 130 plumbing firms in Toronto, last year there were double this number and the 1909 figures will probably reach 350 before the year is out. Cincinnati with 450,000 population had only 211 registered plumbing firms last year, Milwaukee with 350,000 only 156, Washington with 340,000 only 196, and Montreal with 400,000 about 260.

Which is it best to have—a large number of licensed plumbers, subject to no examination, many without shops and having no system to their work, and with one inspector to watch over the work of about fifty masters driven to desperation by price-cutting, or a fewer number of registered plumbers, all subject to examination, doing their work in a business-like way, getting a fair competitive price for contracts, and not compelled to dodge the inspector and "skin" the job wherever possible in order to get a profit, pay supply house bills and stay in business?

The Plumber and Steamfitter does not favor building a fence around the plumbing business but it wants to see existing conditions improved and suggests the formation of a committee of Toronto master plumbers to confer with the civic authorities regarding the establishment of examinations and the raising of the license fee.

THE SECRET COMMISSIONS ACT.

Nothing has so stirred the plumbing and heating trade for some time as the publicity given the "Secret Commissions Act," now in force, in the last issue of The Plumber and Steamfitter.

Some doubt exists, however, as to the scope of the act, but from the best authority available, it is considered that the act is intended to mean that any special consideration not shown on an invoice will be considered as a secret rebate and both buyer and seller are liable to prosecution. For instance, a traveler can quote a line of goods at 50 off the list and he can give an extra five or ten, providing it is done openly and is shown on the invoice. He cannot give a secret rebate, however, without both parties becoming guilty of a criminal offence.

The act is primarily intended to prevent purchasing agents for governments and corporations from accepting secret commissions, but it goes further and prevents travelers from giving secret rebates and includes the receiver as well as the giver as subject to the penalties of the Act.

Commenting on the act a manufacturer writes:

Editor Plumber and Steamfitter,—You are undoubtedly doing a great public service in bringing this act before your readers. Too much publicity cannot be given to the fact that our corrupt business methods have forced such legislation, and it calls attention to the alarming increase in the petty bribe and graft custom in business life in Canada. In this particular we seem to be following closely the regrettable usuages of our neighbors south of the line, although the Old Country is not a stranger to it.

This matter is more important and far-reaching than is generally supposed; in some lines of business it amounts almost to blackmail. Some government and municipal employees look for a commission, and trade is only secured through this channel. Purchasing agents in large concerns have to face it, and in some cases suggest it. In fact, this dishonest and debasing process runs through so many avenues and lines that it is impossible to enumerate them. It destroys fair competition and is utterly demoralizing to the individual and the nation.

In the interests of common honesty, business integrity and good citizenship, this abuse should be stamped out. It curses "him that gives and him that takes."

"MANUFACTURER."

Toronto, November 11, 1909.

We believe this act to be to the interests of both manufacturers and plumbing and heating contractors, and it is hoped that all will assist in its enforcement.

IS HAMILTON WAKING UP?

One of the most backward cities in North America, so far as plumbing regulations and plumbing work is concerned, is the City of Hamilton, sometimes known as the "Ambitious City."

If Hamilton is ambitious to be known for its slowness in adopting modern sanitary precautions it has already achieved its aim for, in the plumbing trade at least, Hamilton is known as a city where "everything goes."

No plumbing by-law is in force and there is no plumbing inspector. Consequently it was not surprising to recently hear a manufacturer of plumbing goods make the statement that he always had a market in Hamilton for any goods he could not sell in other Ontario cities. And the further statement was made that Hamilton was about the only place from which orders came for a certain kind of light weight goods only made when ordered.

But the report comes that Hamilton may at last appoint a plumbing inspector. May the news be true and may her master plumbers persist in an agitation to establish a modern plumbing code and stop the "Ambitious City" from being a dumping ground for defective and shoddy plumbing goods.

THE PLUMBING INSPECTORS' CONVENTION.

The American Society of Inspectors of Plumbing and Sanitary Engineers will hold its fifth annual meeting in Trenton, N.J., January 20, 21 and 22, 1910, according to the official call just issued by President Chas. B. Ball, Chief Sanitary Inspector, Chicago. In his call for the convention President Ball states that "preparations already made assure some interesting papers and discussions for the occasion."

Every Canadian municipality having a sanitary inspector on its pay roll ought to be represented at this coming convention, and money spent by a city or town in sending a delegate will be amply repaid in the benefits accruing from having a more intelligent inspector on its staff.

The American Society of Inspectors already includes several Canadians on its membership roll, but there is no reason but neglect for the fact that the Canadian list is not larger. The society is worthy of support and it should receive it.

THE EDUCATION OF THE APPRENTICE.

By J. F. Brady.

To help along and educate the apprentice in the shop is a question not to be considered too lightly. It is one which has proven both a liability and an asset to the business of many plumbers, and of a number of the writer's acquaintance.

A striking example of the case of one apprentice may probably be of interest. The journeymen with whom he was placed allowed him to find out what he could himself, and for a year the poor fellow pulled along without accomplishing much for himself or his boss, and the boss discharged him, feeling that the boy was at fault. But a wide-awake "business" plumber took hold of the young man—employed him. First of all, he found out how much he knew about the work; then he talked with him and set him right on several points and placed him in the shop. From time to time he helped him along by pointing out this or that, and the journeymen in the shop, seeing such an example set them by the boss, gradually fell in line and helped, rather than retard, the boy's advancement.

Nor was this all this "business" plumber did. He sent this apprentice to night school, so that he might be better educated in the necessary subjects of every-day business.

Which master plumber increased his business assets through the apprentice?

Surely not the one who held the boy back. And the business plumber who made the boy's rise possible by kindness and instruction never lost anything by the expense to which he was placed, for this young man always worked to this boss's interest, and became a valuable asset.

Another thing which resulted from the kindness shown the boy by the journeymen was that the union received a member who was probably better educated than a great many of the others, and was able to guide the affairs in a more businesslike manner. If the journeymen in the second shop had treated him as those in the first shop did, it is safe to say that the apprentice would always have been an enemy to unionism in the journeymen ranks. It is certainly, therefore, for more advantageous, both to the master plumber and to the journeymen alike, that the apprentice be assisted as much as possible, and not retarded, in his advancement.

The Plumber's Position in the Community

Practical Suggestions as to Why the Master Plumber Should Take an Active Interest in Public Affairs—If the Plumber is Looked Upon as a Time-killer and Grafter he Must Place the Blame on His Own Shoulders.

(Written for this paper by Charles H. Denison.)

The age of progress is upon us in all industrial lines, yet a goodly number who belong to our craft are satisfied to have their position in the town where they reside represented by a cipher.

The total amount of the plumbing and heating business of the western continent, considered throughout the various changes from the raw material to the customer, runs into the hundreds of millions of dollars, and viewed from the standpoint of mere dollars, it is an unfair proposition that our craft should cut so small a figure in the general run of events.

The master plumber or fitter fails to make himself prominent in his home town and neglects to seize the opportunities which come to him from all sides. He, seemingly, is satisfied to do, in a general way, the bidding of others, and instead of being an authority, he is, many times, looked upon as a mere convenience.

The general improvement of society is slowly bringing about various changes, one of which is the forcing into our craft a class of men possessed of more "sand" and business ability than the plumber of the days of yore. Another point worthy of consideration is that there are some in the business who have had their eyes opened through many bitter experiences, and these men are now alive to the occasion.

These two classes within the ranks of our craft are generally not afraid to step forward and assume their proper share of the burdens of the community, and, in most cases, they are equal to the occasion.

The twentieth century is bringing forth more improvements than any other period of the world's history, and it follows, therefore, in order to keep up with the band wagon one must improve constantly in every possible manner. The man who refuses to progress will drop behind and vanish from sight like a shooting star.

Some fifty or sixty years ago the number of waterworks systems in America were few and far between. To-day hundreds of towns having a population from 1,500 up, have first-class systems. There are hundreds of other towns and small cities that should be so provided for.

How Public Life Helps.

Any plumber can at once see the amount of new business that this would create. The "main squeeze" in working up any such proposition should be the master plumber himself, but can he do it? Is he able to come to the front and present facts and figures showing why the water (as a general proposition) would be purer and more plentiful, to say nothing of the greater security afforded regarding fire protection?

Can he show how such a system would necessitate the use of proper sewers and that such improvements would be a blessing to all and that many people would locate in that town or city to receive the benefits of these public improvements?

If this plumber has not the ability or courage to do these things, he is not alive to the opportunities at hand and he is not occupying his proper position in the community, and it is up to him to get next to himself. The village doctor or city physician occupies a position of some prominence in his particular locality. His opinions upon almost any topic are listened to with respect and in certain instances have much influence with the people.

The physician merely tries to cure that which in many instances the plumber can prevent. How many towns or cities can any reader of this article mention wherein the word of a master plumber or fitter bears equal weight with that of a physician?

It is not intended to convey the idea that the plumber should be able to put his proposition into Latin or Greek nor to quote exhaustively from authors who use words beyond the comprehension of ordinary mortals. That is unnecessary.

Facts and figures are at hand whereby the craftsman could post himself in such a manner that he could put up an intelligent line of argument that would be listened to with respect, and if told in a common sense manner it would at once commend itself to common sense people, and this is another place where the average master falls down completely.

Must Use Progressive Methods.

A man spends thousands of dollars in building a fine residence calculated to be " a thing of beauty," and I suppose a joy forever, but the two most important considerations pertaining to the health and comfort of the family are left until the last, or neglected entirely, I refer to the heating and plumbing in the residence.

Now the plumber of fitter who will stand aside and submit to the whims and speculations of the average architect and allow the owner to be unduly influenced, simply is not "on to his job." It is up to the craftsman at this point to stride into the limelight and exploit his goods and business and show the house builder how he can have a comfortable and a sanitary home. Plate glass windows and an imposing front upon the house are but cold comfort when the mercury is hovering in the vicinity of zero.

It has been demonstrated times without number that the average plumber cannot sell his goods. He may be able to make a rough estimate, cutting prices until he is the lowest bidder, but to step out and make a clean cut, fair and square legitimate sale, regardless of price, why, not one in ten can accomplish this act.

The quality of the goods and superior method of doing the work are the points which should receive the main consideration, and not the price of the job.

Not long since the remark was made "that the plumbing business did not afford sufficient opportunities tending to produce first-class business men."

The party that made that assertion was certainly "asleep at the switch." In our business the contracts range anywhere from $100 to $100,000, and sometimes even more.

PLUMBERS IN PUBLIC LIFE.

During the past year The Plumber and Steamfitter has published articles referring to a number of Ontario master plumbers who have been candidates for public offices.

Kingston and Chatham have plumbers in the mayoral chairs, while St. Catharines also had a plumber mayor for a couple of years. Toronto, Hamilton and Guelph have plumbers sitting at the council board in aldermanic seats and in a number of other places plumbers have shown their interest in public questions by contesting elections.

The editor of The Plumber and Steamfitter would like to be advised of the names of any in the trade who are nominated for public positions during the coming municipal elections in Ontario and in all the other provinces.

It depends upon the business getting qualities of the master as to just how many of these contracts he has upon his books.

The facts of the case are that there is not a business upon the footstool which affords better chances for men of intelligence and worth than our craft.

Many Opportunities Neglected.

Read the papers and magazines, noting the gigantic improvements contemplated, observe the discoveries in science, ascertain when these apply to our business and judge for yourself. The plumber neglects becoming legitimately conspicuous and is seemingly content to remain in obscurity. The winning cards are thrust into his hands yet he neglects to play them and is satisfied, mostly, to run the game upon his grandfathers' principles. A certain master once remarked, "we don't have to get out and hustle up the work and advertise, that day has passed." I noticed that this man had one and one-half journeymen working in the shop (the half being the apprentice.)

It would be a safe bet that the master who made that remark did not know where he was at nor whether or not he was making any profit.

The day is here when the craft demands better workmen and business men with broader ideas; men who can arise to any general occasion and express themselves forcibly in decent English, upon any ordinary topic which any common business man can talk upon intelligently.

A man does not need to be an orator in order to do this, but he must have courage and the wit to grasp the chance when it comes his way.

Can Only Blame Himself.

If the plumber is looked upon with disfavor and regarded with suspicion it is his own fault.

The remedy is in his keeping. The plumbing business is all to the good; the trouble lies in the way it is conducted and the manner of men who pretend to run it.

The opinion of the public regarding our craft can be changed and it is up to the plumber to get busy at once.

Instead of allowing nearly everybody to think us a bunch of time killers and grafters, the people should be brought to believe that what we do is for their good. It may be stated right here that in order to convey any such impression the plumber himself must be a man of parts who proves his words by his own conduct in life. Let his dealings be "on the square," and let him favor better work, better goods, public improvements, and the arousing of public sentiment toward this end. He should have wit enough to put the case in such a way that the people could not help but be convinced that these improvements were the very things they most needed, and were instituted for public benefit and not to put a few extra dollars in the plumber's pockets.

"But I haven't time to do this," remarks some doubting Thomas.

Say! The average person squanders uselessly just about half of his time on earth.

You do not know what you can do until you try.

The lack of work has killed more men than hard labor ever crippled.

The field is large and those who cultivate it are few in number. Why not present yourself to the craft as a Christmas offering of one who will use his best efforts to assist in placing the plumbing business upon the level where it belongs? Your reward and your proper place in the community will then come of its own accord.

PLUMBING DONE WITHOUT A LICENSE.

It is something new for a daily newspaper to go into the plumbing business, but that is just what has happened in Toronto.

The Toronto World, published by W. F. Maclean, M.P., has been erecting a new building on Richmond street, south of the City Hall, and desiring to do the construction work economically, its own employes have overseen much of the work.

When it came to do the plumbing, however, a license was considered necessary, and an employe went to the City Hall and applied for one. License Commissioner Davenport asked some questions, however, and not receiving satisfactory replies, refused to grant a license.

This did not deter the publishers, however, so they went ahead without one, the plumbing work being done by Charles O'Donnell, who last had a license in 1907, when he did some work at the Scarboro Beach Park.

The World has published large advertisements in its columns for plumbers and steamfitters, asking them to apply to the "Superintendent, World New Building, 40 Richmond street west," and as it has been occupying the building for some time the plumbing work has apparently been done in satisfactory manner to pass inspection.

The precedent, however, is one which should not be allowed to pass unnoticed. If one concern can do its own plumbing, after a license has been refused, others can do likewise. The license by-law should be enforced or it should be abolished.

The by-law referring to plumbers' licenses reads as follows:

> "(34a) No person shall receive a license of a master plumber unless he is of the full age of twenty-one years, and has a place of business within the city.
>
> "(34b) Every person so to be licensed as a master plumber must either be himself a practical plumber or employ a sufficient number of regularly educated, practical and experienced plumbers to do all work which he may engage to do, and shall not permit or allow any work to be done by or for him, or in connection with his business, except by such competent workmen, and by apprentices working under them.
>
> "(34c) A partnership of two or more persons desiring to carry on the business of master plumbers may do so upon obtaining the license, and the word 'person' in this by-law shall include such partnership. When two or more persons shall be licensed as partners, the license shall be issued in the name of the firm or co-partnership. Any change in the firm or location of the business shall be promptly reported to the chief constable.
>
> "(34d) No license issued to a master plumber shall be transferable."

It is not hard to meet the requirement that a licensed plumber must have a place of business within the city. All kinds of license is given to a definition of what is a place of business. This clause should be more definite and the rule regarding the employment of practical men can only be enforced by the requirement of an examination.

It is opportune that something be done to reorganize the rules governing the licensing of master plumbers in Toronto.

George Thompson, senior member of the George Thompson Plumbing Company, Grand Rapids, Mich., has just completed forty years as a plumber in that city. Mr. Thompson learned the trade in Toronto and worked as a journeyman in Buffalo, Cleveland and Detroit until 1869, when he came to Grand Rapids, a place which not then on the map, and worked there as journeyman until the spring of 1881, when he started in business on his own account.

Harrison Public Baths Opened at Toronto

Free Showers for Both Men and Women—Plunge Bath Also Used by Both Sexes —Description of the Plumbing Fixtures and the Heating System—Some Novel Features—First Building of its Kind in Canada, But Winnipeg May Erect a Similar Bath House.

The Harrison Baths at Toronto, the first public bath house in Canada, is now open. The building, which is of brick, stone and concrete, presents a neat appearance. It is 140 feet long by 52 feet wide, and is built on St. Patrick's Square—a piece of public property—near the central part of the city.

The baths were erected and equipped at a cost of $46,000, of which sum about $5,000 represents the furnishings. The front portion of the building has two stories and a basement, and the rear portion one storey and basement, the plunge room ceiling taking in the height of the building, with a gallery to one side.

The plunge room occupies nearly the whole of the rear portion, the front being divided as follows : basement, engine room and laundry ; ground floor—office, reception rooms, and showers for men and women. The floor above contains the living apartments of the caretaker.

The Shower Baths.

Entering from the street, separate doorways lead to the men's and women's waiting and accommodation rooms. Between these two is the office. Leading from the reception rooms are the shower rooms. In the women's department are eight showers and one bath tub, the latter for aged and sick people and infants. In the men's section there are fourteen showers, a tub, and two gang showers of seven sprays for boys. All the showers in both the men's and women's departments, with the exception of the boys' gang shower, are separately enclosed, the partitions and walls being of marble. Indeed, throughout the building marble partitions and wall facings are general.

A wide stairway, fitted with patent tread plates, leads from the women's section to the basement, where is located the public laundry (not yet in operation), containing four sets of laundry tubs, with gas pressers for ironing and a battery of steam dryers. Behind this is a private laundry for washing the towels used in the baths above. Off this is the engine room, which contains the heating and pumping plant.

The Plunge Bath.

In the rear of the building is located the plunge—a separate entrance leading to this swimming-pool. The plunge itself is 60 feet long by 26 feet wide. When filled it has 7 feet of water at its greatest depth, tapering off to 4 feet at the opposite end. Stairways or ladders lead into the water at the four corners. The tank is built of cement, at the top being a marble nosing. The floor of the room, too, is of reinforced concrete.

The tank contains 60,000 gallons of water, which at 10 pounds per gallon, means a weight of water alone of 600,000 pounds. The water is changed daily and the tank walls and floor thoroughly scoured. It requires 8 hours to heat the water to 78 degrees for every day's bath, the heat being supplied by direct steam through a "Noiseless muffler water heater, at the end of a 3-inch galvanized steam pipe, the muffler forming an injector, both steam and water entering at the same time. This muffler is made by the Eynon-Evans Company, Philadelphia. 80 pounds of steam are required to heat 80 pounds of steam are required to heat the water. Fourteen overflows are placed around the top of the bath, each drained into a 2-inch pipe, and a gutter around the top edge carries off the drips from the bathers into a 6-inch pipe, so that this water does not again enter the pool.

A huge skylight extending the length of the room gives plenty of light in daytime, and a combination electric and gas lighting system gives illumination at night. There are 50 32-candle power incandescent lamps alone in this room. Ventilation is secured through a double series of windows let into the sides of the skylight, besides a number of wall windows. To prevent cold down drafts when the top windows are open, the skylight walls are lined with steam pipes. The walls of the plunge room are lined with white glass-faced tiles, and a series of wall radiators heat the room. This room also contains a bubbler drinking fountain of the self-closing nozzle variety with porcelain bowl.

Before the bather can enter the swimming tank he must take a shower, seven of these fixtures being located in a room off the dressing-rooms. These fixtures are of a combination variety allowing the water to start at cold and gradually work round to hot. The dressing-rooms are located on the ground floor and in the gallery above, both of which overlook the swimming-tank. There are 100 lockers, and this number of bathers may be accommodated at one time.

There are two w.c.'s and three urinals in this part of the building ; and in the shower rooms in the men's section at the front there are two w.c.'s and three urinals. There are as well two water closets and one lavatory in the women's section.

The Plumbing Work.

The plumbing was done by K. J. Allison, 668 Yonge Street, Toronto, his contract amounting to $8,990, which included the cost of fixtures, piping and all material. All the cast iron fittings to drains, soil pipes and waste pipes are of extra heavy pattern, and all cast iron drains and traps in the building have removable plugs to allow for further drains and traps in the building have removeable plugs to allow for further connections, if these are found necessary. All the wastes and vents have brass thimbles and lead connections. There are 20 bell traps in the building, the basement ones of heavy cast iron, while those above have brass tops and brass-hinged gratings. Cleaning screws and are fixed at the ends of all cast iron mains and branches, and all the joints in the iron pipes are made perfectly watertight.

The different groups of showers and baths have 3-inch waste pipes, with 2-inch branches, lead traps and vents to each individual fixture, and brass stop and waste cocks are provided throughout, so that each destributing branch may be cut off, drained and repaired, if necessary, without interfering with the other services. This separate shut-off valve attached to each fixture is, in fact, one of the striking plumbing features in the building.

All the branches have heavy ground joint unions, so fitted that repairs can be effected without dismantling. A short branch with a brass stop cock has been put in near the outside wall which will empty the entire system of cold water piping in the building. All the fixtures and branches in the bath house showing above the floor are nickel plated.

Plumbing Fixtures.

The list of plumbing fixtures in the building are as follows : basement,—8 laundry tubs, 2 w.c.'s, 2 sinks, 2 hose nozzles ; first floor—2 basins, 4 w.c.'s, 4 urinals, 1 slop sink, 2 bath tubs, 1 drinking fountain, 8 showers, (women), 14 showers (men), 6 showers (boys),

7 showers (plunge room), 4 hose nozzles ; second floor—1 basin, 1 w.c., 1 bath tub, 1 sink and draining board.

The laundry tubs are Mott's colonialware with roll rim, hot and cold water laid on to each pair, and with Cooper brass compression cocks. Two of the w.c.'s are of Robertson's "Fleur-de-lis" pattern, with low down combination. All the rest are Mott's "International," with automatic valves. The three sinks are Standard Ideal porcelain-enamelled roll rims ; and the three wash basins are also Standard Ideal patterns. The four urinals are Mott's "Sanito" colonialware, and the slop sink in the men's shower room is a Mott's "Hanover" roll rim colonialware sink. The bath tubs are Standard Ideal "Empress" porcelain-enamelled cast iron bath, with 3-inch roll rims and are each 5 feet, 6 inches long. All this enamelware is fitted with Fuller double bath cocks.

The 35 showers are Mott's fixtures with "Securo" mixing valve. The rain shower has a diameter of 5 inches. The supply pipes in the men's and women's shower rooms are hidden, but in all the rest are exposed to view.

Water Supply.

The cold water supply for the building comes through a 4-inch service from the main, and all the services in the bath house are of galvanized iron piping, with ½-inch branches to fittings. The hot water service is controlled by a No. 2 Tobey heater, supplied by a 3-inch feed pipe. This is a non-storage system of heating, the water being heated as fast as required. From the heater runs a 2½-inch pipe distributing branches to all the fixtures, the pipes being so laid that a quick circulation is ensured. A 2-inch branch runs to the plunge bath. On the larger services are standard gate valves, the smaller pipes having brass stop and waste cocks. The heater itself has a shell 7 feet long. The upper shell is 8 inches, and the lower shell 16 inches in diameter. The heater is fitted with high pressure connections.

The gas supply throughout the structure is distributed through a 1½-inch main, the branches being of 1-inch, ¾-inch, ½-inch and ⅜-inch pipes.

Simple Pipe Coloring System.

A simple, yet convenient plan for quickly showing the various pipe systems throughout the building is in vogue in the coloring of the feed and larger pipes. All these pipes, with the exception of the waste and soil pipes, are covered with asbestos and canvas jackets. The cold water supply pipes are painted black ; hot water, grey; and the steam pipes for heating and pressure, white. The soil pipes are uncovered and are painted yellow.

The plumbing contract also had linked with it the metal work and marble work in the building. All the supports, clamps, wall flanges, bolts and octagon nuts, expanssion bolts ; end, running, front, corner and cross pieces ; railings and standards are Mott's patterns, nickel-plated.

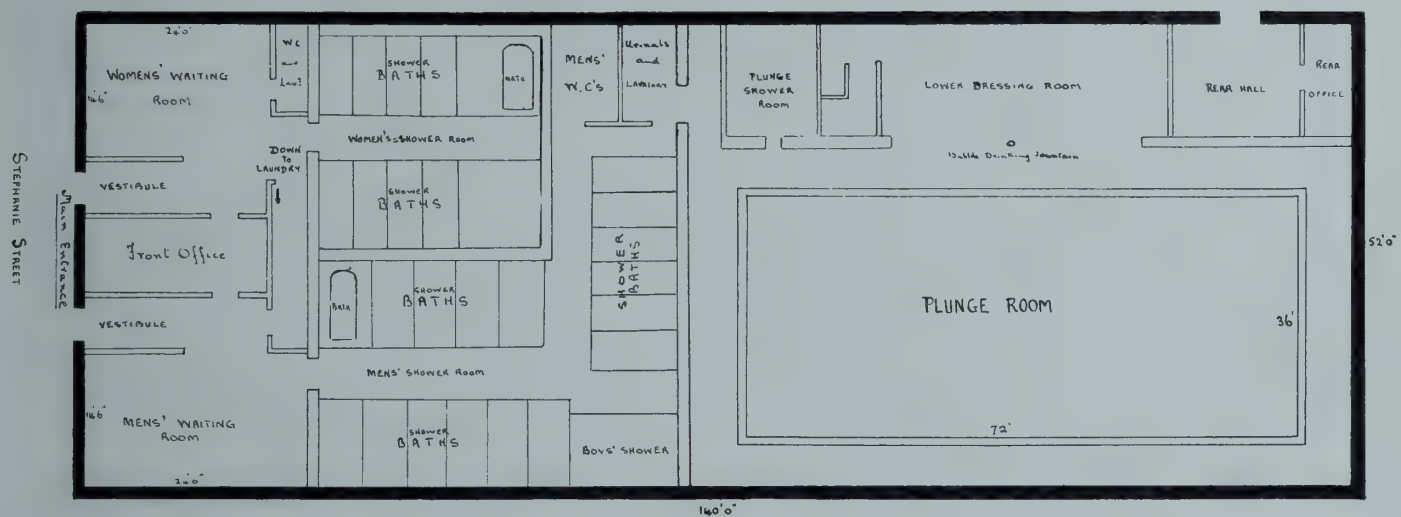
The marble work comprised the fronts, backs, sides and sub-divisions to shower stalls and two small bath rooms ; the front of the attendant's room in the men's shower, the walls surrounding the shower room, and many smaller portions of the building, which are lined with highly-polished Italian marble supplied by the James Robertson Co., Toronto.

All the vent pipes are concealed, and are fitted with bell mouths and white porcelain enameled iron registers. The gallery front has wrought iron railings formed of 2-inch pipe, and an iron handrail just above the water-line in the pool, of 1½ inch pipe, the steps to the plunge having a patent tread.

The Heating Contract

The heating contract was secured by Geo. Syme, Toronto, at $4,450, and, like the plumber, he had to supply the pipes, fittings, valves, cocks, checks, gauges and all the other material.

The heating system (which is a steam system with a hot air auxiliary) has as a base two horizontal multi-tubular boilers of Inglis make, each arranged for the purpose of supplying both high and low pressure steam. The high pressure system supplies steam to the laundry, Tobery heater, plunge bath and pumps, the low pressure supplying the heating for the building. The heating is supplied by a two-pipe system, using two pounds of steam. The piping from the two boilers is so arranged, cross connected and valved so that the boilers can be used either separately or combined. Each boiler is of 48-inch diameter, 14 feet long, and contains 52 lap-welded 3-inch tubes, with an efficiency of 46 h.p. There is a high pressure "J.M.T." 10-inch brass rim steam gauge with cock and pipe for connecting each steam gauge. Altogether five pounds of steam is carried for heating the building and for running the plant. The water feed is a 1-inch pipe. The main steam pipes are carried generally below the basement ceiling, with lateral branches leading to the different risers throughout the building. The main returns follow the same general direction, but are one size smaller in diameter. All the mains, risers and relays have relief sys hm hm hm hm df- hm hm hm relief pipes, and the entire piping system has the necessary mains and returns,



Ground Floor Plan—Harrison Baths, Toronto.

risers and returns, connections, reliefs and relays, and is so equipped that it can be entirely drained empty. The piping is also arranged with valves so that any separate branch can be closed at any time without interfering with the rest of the system.

A 1-inch steam pipe supplies the laundry tubs; ½-inch brass pipe branches running to each tub. The soap tank likewise has a ½-inch pipe. The washer and mangle have a 1½-inch pipe, and a 2-inch pipe runs to the drying rooms.

The return pipes from the heating system are collected into wet return mains and an automatic feed pump receives the condensation,which is returned to the boiler. This pump and receiver consists of two Smart-Turner duplex pumps, one on each side of the tank, and so arranged that either or both pumps can be operated at the same time.

All the steam pipes that can be reached in the public rooms are protected by a larger size of perforated pipe and the radiators have wire guards. The radiators are of plain two-loop "Safford" pattern, with some wall radiators and King indirects, besides wall coils. The total amount of radiation is 2,481 square feet. There are 12 wall in the building and 27 floor radiators. All these radiators are so connected that they can be easily disconnected after closing the radiator valves. Return bends serve this purpose in the coils.

There are four stacks of indirects to supply warm fresh air: one to supply the men's shower room; one for the women's shower room; and two for the plunge room.

Some of the other contractors were: A. B. Ormsby & Co., Toronto, roofing and metal work, $1,398; glass tiling, Canada Glass Co., Toronto, $480; electric wiring, W. J. McGuire, Toronto, $500; laundry outfit, Toronto Laundry Machinery Co., Toronto, $2,250; hardware, J. L. Vokes & Son., Toronto, $299; lighting fixtures, Keith & Fitzsimons, Toronto, $315. The Toronto Foundry Co. supplied the soil pipe used in the building, and both Jenkins and "J.M. T." brass valves are used in the heating system.

Of General Interest.

The cost of maintenance is estimated at $16,592 per annum, of which $11,408 is expected to be met by making a charge of 10 cents for the plunge. The showers are free, each patron being supplied with towel and soap. Some doubt has been cast on the success of maintaining a public laundry, and this part of the bath house may not be put in operation at all, and will certainly not be operated for some little while. The private laundry will wash the towels used in the institution, each towel will be subjected to a disinfectant solution as it goes through the cleaning process.

The staff in charge consists of five men and one woman. At present two tons of coal are consumed daily, but, when the bath house is in smooth running order and the weather is colder it is expected that three tons will be necessary. There are no means of estimating the daily amount of water used beyond that used in the plunge. The showers have a capacity of four gallons per minute. The public showers are open to the public from 9 a.m. to 6 p.m., and the plunge from 2 to 11 p.m.

On the first day 170 citizens used the plunge, and the first week 1,422 persons used either the plunge or the showers. The first Saturday saw 440 in the swimming pool. The daily average the second week rose from 170 to 297. As yet the daily average of women users has been but 8.

CONVENTION PROCEEDINGS.

The official proceedings of the American Society of Inspectors of Plumbing and Sanitary Engineers for the fourth annual meeting, held at Omaha, Neb., Feb. 8-10, 1909, have been published, and non-members of the society can purchase copies at $2.50 each, from Secretary-Treasurer C. S. McCosker, 264 Francis Street, Mobile, Alabama. The book is published in the usual handy size, 5¼x7½ inches, in which all the previous proceedings of the society appeared. It consists of 352 pages, filled with valuable papers and invaluable discussions on topics of vital interest to plumbing inspectors and sanitary engineers. As "Domestic Engineering" says, a careful perusal of this volume makes us wonder how any wide-awake plumbing inspector or sanitary engineer can reconcile his best interest, or that of the municipality which he represents, with non-membership in this energetic and progressive society. The value of the book is enhanced by a carefully prepared index and a list of contents, which make it handy for reference.

The proceedings of the twenty-seventh annual convention of the National Association of Master Plumbers, held at Detroit, Mich., June 22, 23 and 24, 1909, have been issued by the National Office at 1426 New York Avenue, Washington. It makes a neat volume of 174 pages, is printed on good paper and carefully gotten up in every respect.

Crane Co.'s Plumbing & Heating Supply House at Vancouver.

How to Safeguard the Heating Profession

W. M. Mackay, a Canadian, who has Won a High Standing in the Heating Trade in the United States, Gives Some Practical Advice in an Address Before the American Society of Heating and Ventilating Engineers.

While we possibly number among our members two-thirds of the competent heating and ventilating engineers in the United States, it is a positive fact that we do not number 20 per cent. of those who attempt to design and superintend the instalation of heating and ventilating apparatus, and who, in many cases, lacking knowledge and experience in the subject, design apparatus which, on account of their lack of experience, is faulty both in design and operation and is neither efficient nor economical, bringing discredit on the entire profession. This is more noticeable in public work, such as schools and public buildings, where, in many cases, a competent heating and ventilating engineer is not employed, but where the heating contractor is also the designer, and as in this class of work it is customary to accept the lowest bid regardless of the efficiency or completeness of the apparatus for the purpose intended, many of these buildings which should be the best models of heating and ventilation are the poorest, and are, in many cases, through the lack of knowledge and experience of the designers, dismal failures.

At the last annual meeting of the society I spoke on this subject under a topic, "The Necessity for Having Ventilation Laws Apply to the Instalation of Apparatus in Old as Well as New Buildings," citing a case where a school board composed of 15 members, in a State which has a schoolhouse ventilating law in force, employed a person who had no knowledge of the existence of the law and no previous experience to design a ventilating apparatus for a large school building built some years before. After he had completed his design they employed a licensed architect to draw up the contract which was taken by the designer and the work installed.

After he had completed the contract I was called in to pass on the work before its final acceptance and payment. Up to this time they were of the opinion that the apparatus, which had been placed during the summer vacation and not operated, was all that they anticipated and desired, and they merely wished it approved before making the final payment. I had to tell them that the apparatus did not come within 75 per cent. of complying with the State law; that it had many faults which were both dangerous to health and life, but that the contractor had done all that he agreed to under the proposition except that, having designed and installed the apparatus, he did not comply with that part of the proposition where he agreed "to do this work in the best possible manner," and that they, as a school board, and their licensed architect, should at least know and comply with the law.

I also cited another case of a 12-room schoolhouse in the same State, which was formerly heated by hot air, with no attempt at ventilation. I advised with the school board as to the best and most economical manner of placing a steam heating and ventilating apparatus, which would comply with the State law. The school board found that the law did not apply to buildings already constructed, and so they finally decided to place an ordinary direct radiation heating apparatus, with no ventilation, in this building, occupied by over 600 pupils, although the saving in cost on the entire apparatus was only about 20 per cent. below what a complete heating and ventilating apparatus would have cost.

I took this matter up with the State Superintendent of Public Instruction, and he wrote, "I regret to advise you that the law does not compel the Board of Education to provide a system of ventilation when a heating plant is installed in a school building erected prior to the enactment of the law," and when I told him that I would use my utmost endeavors to secure legislation which would insure suitable provision for the ventilation of a building when a new heating plant was installed, he wrote, "The information contained in my letter was given with some reluctance, as a great majority of boards of education believe that provision for ventilation must be made in all such cases."

Dr. A. B. Poland, superintendent of public schools, Newark, at the national convention of the Society for the Study and Prevention of Tuberculosis, at Washington, last May, made an interesting statement in the course of his remarks on "Relation of Public Schools to the Anti-Tuberculosis Movement," which was published under the heading, "Few Schools Properly Ventilated and Heated." Dr. Poland Said.—

School Construction Defects

"Having attempted to show by the foregoing that the school is an important, necessary and desirable ally in the campaign against tuberculosis, I wish now too mention briefly some of the ways by which the school can make its service most useful and effective..

Selection of Sites.

"It is a shameful fact, but none the less true, that in most of our cities quite recently, little or no attention has been given to the selection of school sites, except upon grounds of convenience of access by pupils or upon grounds of economy. The notion that sunlight as well as abundant air and exercise have any immediate and necessary relation to school efficiency, has been rarely or never considered. One of the immediate effects of this anti-tuberculosis campaign will be to compel communities to open their eyes with reference to the selection of school sites and the location and orientation of school buildings.

"Sunshine, it is said, is one of the surest and deadliest enemies of the tubercle bacillus; certainly the cheapest, when it can be got for nothing. But few of our school architects have ever taken the question of sunlight into consideration in placing a building on a social site. On the contrary, school boards and school architects have stuck tenaciously to the traditional oblong type of school building and placed it so that at least one-half of the building would rarely or never get a ray of direct sunshine. Types of school architecture have been developed, and other should be, which will fit on a site of any shape or dimension and which will admit sunshine into every room for a part at least of each day. The principles of orientation of school buildings have yet to be studied and described.

Construction of School Buildings.

"During the last few years there has been great progress in schoolhouse construction. In several States sanitary regulations as to space, heat and light have been established by law. Much more remain, however, to be done. Problems of lighting, heating, ventilating, cleaning, airing, dusting and disinfecting are still in most instances far from being satisfactorily solved. Take, for instance, one problem, that of artificial ventilation. I have yet to learn of very many school buildings where a perfect, or, indeed, approximately perfect system, considered,

of course, from the standpoint of the hygienist and not from that of the engineer responsible for installing it, can be seen in operation.

Wretched Ventilation System.

"Scattered throughout the country are school buildings by the thousand wherein artificial heating and ventilating apparatus has been installed that is not only practically useless, but worse than useless, since it compels school children to breathe noxious and often fetid air, when only the window separates them from God's pure atmosphere.

"But it is forbidden to open the windows! Talk of juggernauts, there never was a more hideous juggernaut than that of a worthless system of artificial school ventilation. It is not my purpose to inveigh against artificial heating and ventilating; far from it, but I do protest most emphatically against those pseudo and abortive systems so frequently installed, even by some of our most distinguished heating and ventilating engineers.

"I have in mind as an instance a school building of 23 rooms, located not far from New York, in the erection of which one of the foremost engineers and publicists was employed to devise and supervise the heating and ventilating system. No care nor expense seems to have been spared; but when the system was put in operation six of the 23 rooms could not be heated, and, of course, could not be ventilated. But, despite the protests of superintendent, teachers and pupils, the "system" had to be worked. It had been paid for, and how could the cost to the city be otherwise justified?

A Hit or Miss Business.

"The fact is that heating and ventilating are far from being a science. Sometimes engineers hit it; oftener they do not. It may interest you to know that a friend of mine inspected last summer many of the foremost technical and engineering schools of France, Germany, Holland and England. Among other famous schools he visited that at Charlottenburg, near Berlin. Here is located, as you know, one of the foremost schools of architects and engineering in all Germany, if not in all Europe.

"Discussing heating and ventilating systems, he found that a whole group of rooms in the very building in which the professors gave their enginering instruction had been cut out from the general heating and ventilating system and resort had to gravity methods. On inquiring why this was done, he was told that the artificial methods didn't work. On inquiring further, "Why do you teach what is impractical?" my friend was told, "Only because you have to do it."

"If this can happen in one of the foremost architectural and engineering schools of Europe, what may we expect from inexperienced engineers by whom too many by far of our American school buildings have been experimented with? I am not opposed, however, to appropriate experimenting. We shall have to do a great deal more of it. But I do protest most emphatically against the insistence by so many engineers of school boards that under no consideration shall windows be raised or lowered, however hot or fetid the air, because it will "queer" the whole system! If the opening of a single window throws the whole system out of order let engineers devise a cut-off. It should be as easy to cut in and cut out a room in a heating and ventilating system as in an electric lighting system. If not, why not? Let engineers go to work and find out.

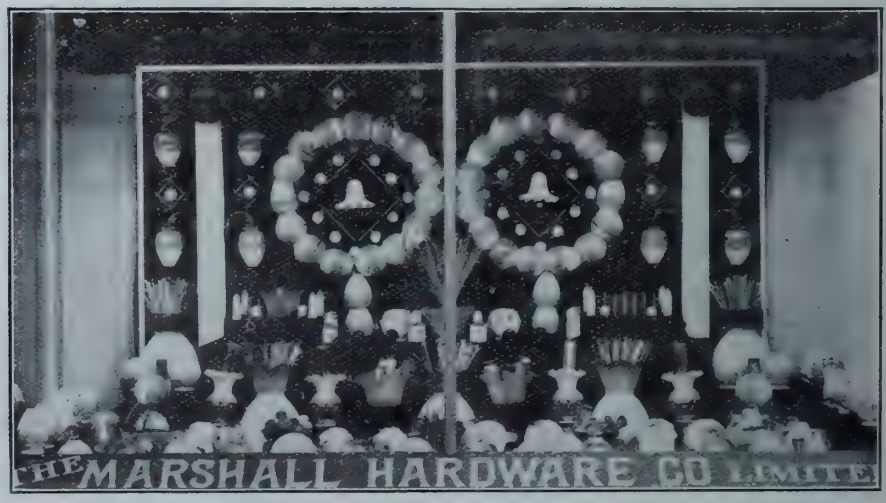
"It seems that this convention, devoted as it is to the problem of pure air and open windows, should appoint a committee to get facts and to make recommendations upon the suppression of the artificial heating and ventilating plague, that is widely prevalent and directly opposed to the anti-tuberculosis movement."

Should Be Standard Test.

There is some truth in Dr. Poland's statements. I know of the particular case to which he refers, and I am pleased to say that the party who designed this heating and ventilating system was not a member of our society. There are, however, many thousand properly designed heating and ventilating apparatus in this country that do operate properly, showing results, efficiency and economy. I feel that our society, which is now in its sixteenth year, comprising the majority of the competent and experienced heating and ventilating engineers in the country, should devise some method to protect its members, other competent heating and ventilating engineers, the public and the children who have to suffer from the mistakes of faulty apparatus designed and placed, particularly in school buildings, making an annual waste of millions of dollars, and bringing discredit on our profession. It is along these lines that I asked our society at the last annual meeting if there should be State control for heating and ventilating engineers. The opinion of some of those present was that this matter would right itself in time, they felt that bringing our society more prominently to the attention of the public would insure competent heating and ventilating engineers being employed for this work, and increase the value of membership in the society.

I would welcome anything that would improve existing conditions and that would insure the employment of competent heating and ventilating engineers at a fair remuneration for this class of work, and which would prevent the employment of incompetent or inexperienced persons at any price.

It is a fact that many professions and occupations less important than ours are protected by State laws in many, possibly all of the States, preventing any but competent, experienced and licensed persons practising their profession or calling, and it seems to me that if State protection is not the proper method to safegaurd our profession and protect the public from imposition, our society should formulate some plan to protect its members and to prevent the public from being imposed upon, and to carry out section 3 of the original objects of the society, which is, "The maintenance of a high professional standard among heating and ventilating engineers."



Fine Lighting Goods Window Dressed by Herbert S. Doan, for the Marshall Hardware Co., Medicine Hat, Alberta.

THERMOSTATIC REGULATOR FOR SMOKE PIPES.

The accompanying illustration shows a simple way used by B. A. Johns, in which to make a thermostatic regulator

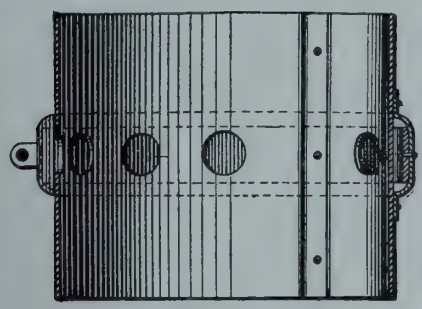


Fig. 1

Fig. 2

Regulator for Smoke Pipes.

that will automatically open passages in the smoke pipe, to admit cold air, thus checking the draft of the furnace, and eventually cooling off the fire. The regulator should be placed as near the furnace as possible. Fig 1 shows a sectional side elevation of the thermostatic regulator, and Fig. 2 a horizontal section of same. In a short piece of pipe, say about 6 inches long, a number of openings are made. These openings are covered with the thermostatic band, which is made as follows: A ring about 2 inches wide, and about 1 inch larger in diameter than the pipe, is made of galvanized iron. The edges are turned down by hammering, as shown in Fig. 1. These turned-down edges are fitted closely to the pipe. In the recess thus formed, a strip of brass or preferably copper is fitted and riveted very closely, say about 1 inch apart, so that when the copper expands, it will not buckle.

To the above-mentioned galvanized ring, opposite the joint, small lugs may be provided for the purpose of fastening same to the pipe. The ring is now cut at the joint, and the ends turned in and fitted closely to the pipe. Two small lugs are riveted to these ends of the ring, with holes to receive a small stove-bolt. Between the head of this bolt and the lug on one side, place a stiff coil spring. This serves the purpose of regulating the tension of the ring, so as to make it more or less sensitive to heat.

As the fire gets too hot, the copper expands more than the iron ring, causing it to move away from the pipe, and cold air from the outside will pass between this ring and the pipe into the holes of same, thereby checking the draft to the furnace, and preventing it from over-heating.

Under normal conditions, of course, the spring does not open, but only under excessive heat; then it will stay open until the furnace cools off.

PLUMBING AND HEATING PATENTS.

121183. W. Schmidt, Wilhelmshohe, Germany, steam superheaters.

121186. H. W. Schulze, Milwaukee gas plates.

121203. F. J. Wood, Desmoines, Iowa, valve gears for steam engines.

121206. F. N. Rutledge, Nortonville, Kansas, steam engine valves.

121226. H. A. Greenan, New York City, devices for cleaning pipes and conduits, National Water Main Cleaning Co.

121246. L. T. Kuehl, Chicago, steam generators.

121288—C. F. Diller, Lancaster, Pa.; gas burners.

121289—P. Doran, Quebec; steam boiler furnaces.

121359—C. J. Watts, Trowbridge, Wiltshire, Eng.; circulators used to accelerate the flow of hot water in boiler pipes and the like.

121360—E. C. Willson, Hammond, Ore.; feed water heating grates.

121419. R. C. Armstrong, St. Thomas, compressed air cistern cleaners.

121431. H. H. Bright, Hempstead, Md., water pipes.

121432. H. Brunner, Spokane, filters.

121444. D. G. Davis, Punsutawney, Pa., valves.

121454. W. J. Ellis, Andrews, N. Car., steam boiler furnaces.

121472. W. H. Kogle, Mason City, hot water and water steam heaters.

121529. R. Warg, Milwaukee, steam radiators.

121535. W. J. Simpson, Hope, Idaho, shakers for grates.

121550. H. A. Greeman, New York City, device for carrying cables through water mains, National Water Main Cleaning Co.

121581. I. K. Hisey and R. M. Wardle, Carleton, Ore.; water filters.

121585. S. F. Atkinson, McNewton, Pa.; adjustable gauges.

121587. H. Barber, Olmstead Ill.; traps.

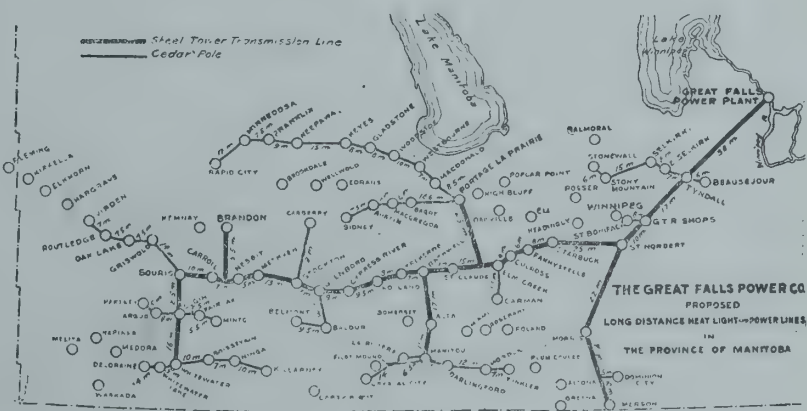
121588. G. F. Barron, Palmyra, N. Y.; faucets.

121591. J. C. Bowers, Taylor, Texas.; safety discharge valve mechs.

121593. T. Broberg, Montreal; sanitary attachments.

121619. A. W. Johnson, Portland, Ore.; combined water heaters and steam cookers.

121625. C. N. Marcellus, Grand Rapids, Mich.; flushing tanks.



Proposed Long Distance Heat, Light an d Power Lines in Manitoba.

MANITOBA POWER LINE.

The extent of the exploitation of electrical power throughout Manitoba by the Great Falls Power Co., and the cities and towns that are included in the scheme, can be understood by the accompanying map.

The extent of the available power at Great Falls, on the Winnipeg river, is conservatively computed at 250,000 horsepower, and negotiations are now pending with every municipality on the route for the service.

Upon completion of these negotiations the Great Falls Power Co. announce that work will be begun so that the transmission of electrical power will be an accomplished fact in 1911, two years from the present summer.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Campeau & Cousineau, plumbers, Montreal, have dissolved.

MacWatt & Frost, plumbers, Moose Jaw, Sask., have dissolved.

W. J. Gowan, plumber, Simcoe, was a visitor to Toronto last week.

A demand of assignment has been made on L. J. Allard, plumber, Montreal.

A demand of assignment has been made on A. C. Barber, plumber, Montreal.

Liquidators have been appointed for The Desmarteau Plumbers' Supply Co., Montreal.

Bridgeburg, Ont., taxpayers are discussing the sewerage system proposed for that town.

Ross & Short, Galt, have secured the contract for the heating of the Dunnville House of Refuge.

T. Latourelle, Montreal, has the contract for heating St. Lambert's convent, St. Lambert, Que.

E. F. Geiger, plumber, Victoria, was thrown from his buggy and had his arm broken some days ago.

Dr. Hutchinson has given instructions that all city water in use at London be boiled until further notice.

Frank Rogers, of Detroit, has been doing some plumbing work for J. W. Fleming & Son, Blenheim.

Verdun's (Que.) filtered water supply is now in operation and the town is free from contagious diseases.

The plumbing in two houses being erected at Vancouver for C. E. Tisdall is being done by Frank Morgan.

S. A. Potticary, plumber, St. Thomas, who was burnt out lately is again doing business in the old stand.

Enoch Dixon, plumber, St. Thomas, followed the general trend of the trade here and was married last week.

The Sarnia Stove Store, Sarnia, has added a department for the construction of gas, steam and water pipe-fitting.

David Ouimet master plumber, Montreal, died recently after a few hours' illness. He was in business for 30 years.

Ald. Hinchey is advocating a scheme for water purification at Ottawa. The ozone system in use at Lindsay will be investigated.

Macdonald & Henry, Stratford, have been awarded the contract for the heating apparatus for the public building at Parkhill at $888.

H. L. Allen, electrical inspector, for the Canadian Fire Underwriters' Association has been appointed electrical inspector for Ottawa.

Morgan & Elkins, who kept a plumbing shop at Vancouver, have dissolved partnership, the business now being carried on by Mr. Morgan.

Members of Hamilton's city council are agitating for a remodelling of the building by-laws, and the appointment of a plumbing inspector.

A number of water users at Galt are complaining of the non-reliability of the meters in use there. Some Toronto users are also complaining.

The C. N. R. are building a big hotel at Port Arthur containing 120 bath rooms. Adam Clarke & Son, Hamilton, have the plumbing contract.

Cunningham & Co., Paris, have secured the plumbing contract for the Railroad Y. M. C. A. building at Mimico. The contract is for $550.

Irving Smith, formerly vice-president of the R. E. T. Pringle Co., Montreal, is setting up in business in Montreal in electrical apparatus and supply lines.

Ridgetown has been invaded by gas stove agents, in anticipation of the expected arrival of natural gas next month and local gasfitters are very busy.

Regina has cut its water rates in half, the maximum rate now being 25 cents per 1,000 gallons. The new water supply is said to be practically inexhaustible.

Montreal's new covered water conduit is almost completed and will be ready for use before the cold weather, thus putting the fear of a water famine at an end.

The Victoria city council has decided to purchase a large water meter, at a cost of $1,278, to register the amount of water supplied to the Oak Bay municipality.

Hamilton & Stott have completed the instalation of the St. Thomas municipal central heating system. Heat was turned on and with one pound of pressure, made the building uncomfortable.

A petition for a winding-up order having been granted there will be a meeting of creditors of the Desmarteau Plumbers' Supply Co., Montreal and Granby, Que., on November 5.

A. D. Beare, until lately with the Standard Sanitary Mfg. Co., Toronto, is now representing The James Morrison Brass Mfg. Co., Toronto, in the eastern part of that city.

C. S. Eaton, representative of the International Heating Co., Cleveland, Ohio, accompanied by George H. Nesbitt, chief engineer, spent a few days in Fort William last week.

W. S. Drewry, C.E., of Nelson, has been appointed chief water commissioner for British Columbia, under the terms of the Water Act, passed last session, and has already assumed office.

A demand of assignment having been made on Stevens, Duquette & Co., plumbers, Montreal, that firm has consented to an assignment being filed, and a meeting of creditors was held on Nov. 13th.

A delegation of Dauphin civic authorities reached Saskatoon on a tour of inspection of sewers and waterworks on behalf of the town of Dauphin. They spent a week taking in Regina, Brandon and other cities by the way.

R. Ford, of Vernon, B.C., has secured the contract for the erection of the building for the Bank of Montreal at Armstrong, to cost $12,000. Armstrong & Caldwell, of Armstrong, have the contract for the plumbing and heating.

Before a building in Ottawa can be connected with the street wires thus establishing an electric service, the wiring in it must be entirely satisfactory, in point of safety, to the newly appointed civic electrical inspector, H. L. Allen.

T. J. Minnes & Co., Brantford, secured the contract for the plumbing and heating at the new Collegiate Institute there, the contract price being near $10,000. They are at present instaling the heating plant in Park Baptist church at the same place.

The Fred. Armstrong Co., at $1,880, have the contract for plumbing in the new Parkdale public school. The heating and ventilating, worth $3,625, will be done by J. R. Seager; and heat regulating, worth $695, by Johnston Temperature Regulating Co., all of Toronto.

L. C. Karstedt, Durham, Ont., intends to move his tin-smithing and plumbing business from his present stand on Mill Street to the old McArthur store next McKechnie's, which he has rented. There he will have room for expansion in present and possibly new lines.

W. B. Clifton, who for twenty-five years conducted a hardware business in Alliston, Ont., has purchased a store there which he is renovating and enlarging by adding another storey. He will carry on a plumbing, tinsmithing and heating business as well as a hardware stock.

The John Ritchie Plumbing Co., Toronto, have been awarded the contract for the plumbing and heating work in connection with the new public comfort station at Queen St. and Broadview Avenue, Toronto, the contract amounting to $3,700. Work will continue during the winter.

Justice Britton at Toronto gave judgment last week by consent for $2,500 in favor of the plaintiff in the action of Boehm v. the Standard Fitting & Valve Co., $2,000 to be paid into court to the credit of infant, the $500 to be paid out for hospital and doctor's bills and law costs.

A week ago the office and sales staff of the Pease Foundry Co., Toronto, gave a complimentary dinner in the St. Charles cafe to T. B. Medforth, who has been their accountant for a number of years, and who has accepted a position with a trust company in Vancouver. A pleasant feature of the evening was the presentation to Mr. Medforth of a case of pipes.

Edward Gurney and E. Holt Gurney, president and sales manager of the Gurney Foundry Co., Toronto, returned last Wednesday from a month's trip to the Pacific coast. They report a good normal trade being done, with no prospective shortages in stocks of heating apparatus. The announcement of the proposed establishment of a branch foundry at New Westminster they characterize as premature.

The Vancouver Steam Supply Co., in which some leading Vancouver plumbers are interested, expect to have its franchise soon completed by the city council, and it will come up again shortly with a small alteration. The object is to supply heat to buildings from a central depot, pipes being laid on the streets, in the same way as gas pipes. The franchise will expire in 1960, the city having the right of purchase in 30 years at a year's notice.

The hardware and plumbing business of McCorkindale & Hall, Owen Sound, has been purchased by R. Morran & Son, of that town. The purchasers are going in strongly for plumbing, heating and gasfitting, as soon as necessary alterations are completed. Earl Morran was clerk with R. P. Butchart & Bro., before going into the new business.

At a city council meeting in Regina, the inspector of water pipes, T. S. Griffiths, stated that 112 out of 222 pipes had been rejected by him. There were 83 pipes out of the 222, which he recommended as serviceable, and suggested their acceptance in a reduction of $4 or $5 on the ton. The council decided not to accept pipes that were not strictly up to the specifications.

The Chatham, Ont., city council has at last taken steps toward the inauguration of a plumbing inspection system. A by-law is to be introduced providing for inspection. The proposed inspector is David Holmes, the present Sanitary Officer, a small addition being made to his present salary to cover the new work. In some quarters the opinion is expressed that a practical plumber should have been appointed.

The Winnipeg Plumbers' Union, which some months ago suffered from an adverse decision in the courts concerning picketing of premises during a strike two years ago, and were not only restrained in perpetuity from picketing again, but had judgment entered for heavy damages against them, are now appealing the case to the Privy Council, and their solicitor has left for England.

W. E. Clark, formerly with the Gurney Foundry Company, Toronto, and Canada Radiator Company, Lachine, has accepted the position as salesman for the Gurney-Tilden Company, Hamilton, and will represent them in Toronto and east to Montreal in hot water and steam boilers and radiators. Mr. Clark knows the territory and ought to make good in his new job. His headquarters will be at 155 King Street West, where samples of Gurney-Tilden boilers and radiators are on display.

Lemmon & Sons, Kingston, who for a number of years have carried on a hardware and plumbing business at 351 King Street, have withdrawn from the hardware business, and will carry on a general plumbing and tinsmithing contracting business, at 273 Earl Street. Mr. Lemmon is a member of the board of health, and has given good service on that civic body. His knowledge of plumbing, etc., is the means of giving the board valuable information along sanitary lines and his counsel is eagerly sought after.

Only a few firms in Chatham, Ont., are paying much attention to electrical work, the "independents" being handicapped to a certain extent by the fact that the Chatham Gas & Electric Light Co., which supplies the current, has on several occasions advertised wiring and fixtures at actual cost, for the purpose of securing new customers for electric light. Nevertheless, Jas. L. Watt & Sons, plumbers, have enjoyed a large and growing business along this line in that city, and have also done considerable work in adjoining towns.

The Fred. Armstrong Co., Toronto, has the plumbing contract, at $1,889, in the new Jones Avenue school at that place, as well as the heating and ventilating contracts worth $8,090. The same company has the plumbing, heating and ventilating contracts in the new Logan Avenue school. They are worth $6,389.

E. J. Gifford, representing a heating company, is applying for a franchise to heat blocks and residences in Brandon. As a provincial franchise would have to be secured, there is no possibility of the company installing a plant this season. The system, however, is to be tried in Winnipeg this winter.

The course of instruction in plumbing by the Montreal Council of Arts and Manufactures has been opened for the season. The teachers are Joseph Duhamel, James Griffin and E. E. Kavanaugh; they were recommended by the Master Plumbers' Association. Instruction will be given on such subjects as lead bossing, lead pipe bending, wiping joints, soldering jonts and seams with soldering iron, also proper use of tools, method of fitting up water closets, bath, sinks, etc., proper traps, soil drain and sewer pipes, proper sizes of pipes for water and drain work, etc., etc., drawings of work with explanations. Lectures on the science of plumbing will be given during the winter. The class is open only to plumbers, apprentices and those employed in plumbers' and steamfitting establishments.

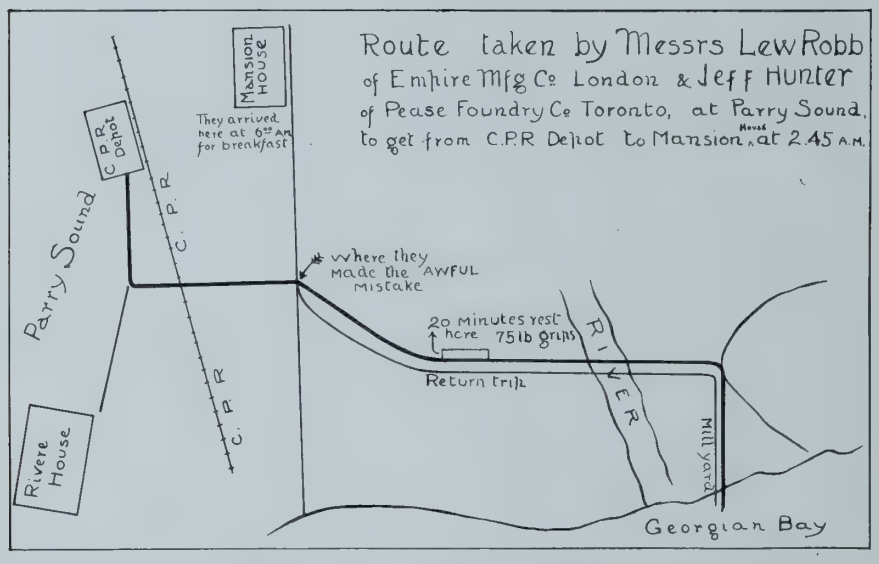
At a special meeting of the St. John city council it was decided to accept the offer made by David Craig, of Boston, for a lease of certain city lots at Greenhead, on the St. John river, for the erection of a plant for the manufacture of concrete houses and plumbing goods. Mr. Craig will pay $850 a year rental, and his lease will run for 14 years. Mr. Craig has been connected with the plumbing trade for many years. He is a native of St. John, having been born there in 1864. At the present time he is president of the Master Plumbers' Association of Boston, and chairman of the legislative committee of that association. In 1905 he was president of the National Association of Master Plumbers of the United States, and is now chairman of the sanitary committee of the association. He has been one of the civil service examiners of Massachusetts for plumbing inspectors since 1898, and is a member of the State Association of Boards of Health, and a member of the Massachusetts Charitable Mechanic Association. He is also a member of the board of directors of the Boston North End plumbing school, and lecturer for the school on the theory of plumbing, since 1898.

TALES OF THE TRADE

LOST IN THE WOODS.

A good story is told on Jeff Hunter, of the Pease Foundry Co., Toronto, and Lew Robb, of the Empire Mfg. Co., London.

One night about a fortnight ago they came down from Sudbury to Parry Sound on the C.P.R., arriving at the Georgian Bay town about 2.45 a.m. Jeff had been taking a snooze on the train and when the Georgian Bay town was at last reached he awoke in a sort of dazed condition, just like he does on a Sunday morning when he wants to sleep in and the juvenile members of the family are more intent on rising early. However, Jeff realized that sleep was only to be had at a hotel, so he essayed to act as guide and Robb and himself struck out in the darkness in search for the Mansion House. From the G.T.R. depot to the hotel was a familiar road, but coming in from Sudbury on the C.P.R. in the dead of night was a new stunt—but who had ever heard of a traveler being lost in a small town of a couple of thousand inhabitants.


Route taken by Messrs Lew Robb of Empire Mfg Co London & Jeff Hunter of Pease Foundry Co Toronto, at Parry Sound, to get from C.P.R Depot to Mansion House at 2.45 A.M.
Mansion House
They arrived here at 6.00 Am for breakfast
C.P.R. Depot
C. P. R.
Parry Sound
* where they made the AWFUL Mistake
20 minutes rest here 75 lb grips
Return trip
RIVER
Mill yard
C. P. R.
Rivere House
Georgian Bay

All Night Walking Stunt Done by Two Salesmen.

Full of confidence in themselves and of hope of a comfortable bed after a short walk the pair trudged along packing their heavy sample cases first in one hand and then the other. Soon they came to a turn in the road. Jeff wanted to turn to the left and thought that would land them at the hotel, but Lew was sure they should go straight ahead and go ahead they did until their tired arms and limbs compelled a rest on the soft side of a picket fence enclosing a graveyard. Twenty minutes gave them new life, however, and with eyes ever seeking a friendly light in a window they finally found themselves down on the shores of Georgian Bay. Here they learned their error and with the brightening of the morning sky in the east they retraced their steps and finally arrived at the hotel about six o'clock, with appetites like a husky span of railroad lorry horses.

The story reminds us of another one told on Jeff Hunter and George McQuillan, of the James Robertson Co. Some time ago they were together in a northern town where local option obtains, and seeking an oasis in the desert they finally asked a local constable if there wasn't an oasis in the town.

"Sure thing," replied the cop, and he lead them along till they came to a church.

"But," said George, "it isn't a church that we want."

"G'wan wid ye," replied the man with the baton, "this is an oasis. It's the only place in town where ye can't get a drink."

A MODEL BATHROOM.

A good help in the plumbing business is a model bathroom shown in the store of J. C. Wanless, at Chatham, Ont. The bathroom occupies a small corner in the rear of the store, adjoining the office.

The floor space used is about the usual bathroom size, and is fenced on the two otherwise open sides by an iron railing. A ceiling has been put in at a height of about 6 feet from the floor, and covering the entire bathroom space, thus heightening the illusion of a bathroom.

The two walls and ceiling of this model bathroom are covered with metallic siding, thus emphasizing the value of this material for bathroom walls and ceilings. The floor is covered with linoleums, which served to attract attention to another item in proper bathroom equipment.

The bathroom itself is completely fitted out, having a large bath tub of the most approved pattern, a corner wash bowl, side wall wash bowl, sanitary appliances, etc. So complete is the equipment that the towel rack and soap dish, attached to the wall above the corner wash bowl, are both in place. There are no water connections, which is the only way in which the model differs from the actual bathroom.

STANDARD SANITARY ENAMELWARE.

A splendidly printed and illustrated book descriptive of "Standard" porcelain enameled plumbing fixtures is the supplement to catalogue P issued by the Standard Sanitary Mfg. Co., Toronto and Pittsburg. The book illustrates not only many entirely new patterns of enamelware, but many improvements of designs shown in catalogue P. The illustrations used are direct photographic reproductions of the fixtures set up, thus making an exact impression on the mind of the person interested of the fixture described. The catalogue contains over 100 pages of descriptive and pictorial matter relating to baths, closets, drinking fountains, lavatories, sinks, etc. A couple of photogravures of the Toronto warehouse are used in the frontispiece.

WOMAN SANITARY INSPECTOR.

Boston has appointed its first woman sanitary inspector, Miss Elizabeth Goldstein. Commenting on the appointment The Survey recently had this to say: "Women sanitary inspectors have for many years been common in England and other foreign countries, but, owing to the fact that women do not lend themselves readily to the schemes of politicians, they have not been employed in Boston. Miss Goldstein, however, was determined to win in the civil service examinations and to make herself felt as an inspector. She was successful in the examinations and is now going about her work with a degree of thoroughness somewhat novel among the inspectors. She knows the North End district, to which she has been assigned; understands the people and their needs, and what can be done with them."

T. A. Cowan, plumber, carried off the prize for the most seasonable and attractive Thanksgiving window in Brantford. It was a representation of a farmyard.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Public Buildings.

The Montreal Foundling Hospital will erect a new building.

Estevan, Sask., Baptists are to have a church erected this fall.

The railway commission has ordered a station to be built at Wattsburg, B.C.

It is announced that the Nelson, B.C., post office will be enlarged.

A new system of heating will be installed in the English grammar school, at Berthier-en-haut, Que.

George Harris was awarded the contract to erect the new hospital at Virden, Man.

Plans are being prepared for a new Baptist church at New Liskeard. Seating capacity 500 persons.

The by-law for the expenditure of $5,000 for school purposes has been approved by Latchford ratepayers.

Plans are being prepared for the erection of a tuberculosis hospital on Moreau Street, Montreal. Estimated cost, $150,000.

The governors of the Royal Victoria Hospital, Barrie, have recommended the addition of a new wing at a cost of $10,000.

The Montreal Protestant School Commissioners will erect a school on Church and Old Orchard Avenues, Notre Dame de Grace.

One of three sisterhoods, at Hull, will erect on a site selected by the city, an hospital building costing from $25,000 to $35,000.

Tenders will be asked for alterations and additions to Wellington Street Methodist church, Brantford, to cost approximately $15,000.

A by-law to raise $50,000 for the purpose of establishing public baths will be submitted to Winnipeg ratepayers at the December elections.

The site for the new Kamloops, B.C., isolation hospital has been chosen and work will be commenced at once. Contractor, Wm. Mackay.

The Regina City Council has purchased a site on which to erect a public library. Negotiations have been opened up with Mr. Carnegie.

The Montreal Art Gallery has secured option of the Holton property on Sherbrooke Street, where they intend to build a large gallery.

It is stated that the C.N.R. have plans prepared for a new station at Fort Frances. It will be fitted with electric light, water and heating apparatus.

At a joint meeting of the Winter Fair Board and the Brandon Board of Works it was decided to call for tenders at once for the construction of the superstructure of the city market and storage building.

After the site for the new fire hall in Western Fort Rouge has been located the Winnipeg civic authorities will be ready for the erection of four fire halls, which will be built next spring. Each hall will cost about $13,000.

The B. C. Government is at present considering plans of the new Prince Rupert general hospital. The plans call for a two-storey structure to cost about $20,000. The work will be started as soon as plans are approved.

The contract for the erection of the new theatre to be built at Regina for Whitmore Bros., from plans prepared by Storey & Van Egmond, has been awarded to Murphy & Martin, at $16,000. The house is to be completed by the middle of December.

The contract for the erection of the new Royal Arthur school, at Montreal, was awarded to C. E. Deakin, by the Protestant Board of School Commissioners, at their last monthly meeting. The contract price is $82,452. The school must be completed by Aug. 10, 1910.

It is understood that the united congregations of St. Gabriel's and Chalmers' churches, Montreal, have purchased the vacant property at Mance and Prince Arthur Streets, and work will be started immediately on the new structure.

The Brantford Collegiate Institute trustees have accepted the bulk tender of Schultz Bros. for the erection of the new Collegiate Institute, the price being $64,519. This does not include, however, plumbing, heating, electric wiring, ventilation and dolomite flooring, which will probably boost the total cost close to $80,000 in all.

Work will shortly be commenced on the foundation and basement of the proposed new sanatorium at Little Manitou Lake, near Watrous, Man. At a meeting of the directors held in Winnipeg recently it was decided to appropriate $150,000 of the stock which has already been subscribed, and go ahead with the building at once.

The Vancouver school board instructed the building committee to commence at once the erection of an eight-room building in the south end, an eight-room building in the southwest part of the city, and an extra four-room adition in the east. In order to provide more accommodation, a manual training building is to be built on the Fairview grounds, so that the room now in use for manual training may be in condition to use as regular classrooms. These improvements are to be ready by the end of the midsummer term, next year; also the Kitsilano and Mount Pleasant schools are to have additions.

Municipal Undertakings.

Plans are being prepared for the Montreal high pressure water system.

Penticton, B.C., proposes to establish a waterworks system next summer.

Hamilton's suburbs are crying out for waterworks extensions and fire protection.

The waterworks by-law for $400,000 has been passed by Vancouver ratepayers.

The contract for Elizabeth street sewer, at Barrie, was let to T. E. McMurray, for $2,125.

P. Corrigan & Co., have been awarded the contract for the Durand street sewer at Sarnia.

Tenders for the construction of the Clifton street sewer, Winnipeg, will be called for at once.

H. Oldland, Fernie, B.C., has secured the contract for installing the sewerage system at Macleod, Alta.

The Portage la Prairie, Man., waterworks by-law has been passed. Estimated expenditure, $20,000.

The instalation of New Liskerad's waterworks connections is held up by the lack of the necessary fittings.

A sewer from Main to Mac street, on Crawford avenue, Winnipeg, is to be constructed at a cost of $3,895.

C. Lethorn, London, has been awarded the contract for furnishing and laying the cast iron water mains there.

Waterworks and electric light extensions, estimated cost $2,600, have been sanctioned by the Port Colborne council.

Tenders are being called for waterworks construction, including piping and valves for wood pipe for South Vancouver.

A by-law will be submitted to the Havelock ratepayers in January next to raise $4,000 for a permanent drainage system.

The Village of Coldwater, Ont., with an assessment of $250,000, is questioning the advisability of installing a system of waterworks.

Dunnville, Ont., town council has passed a sewerage by-law, and tenders for the construction of a system will be received until November 18.

Cleveland & Ducher, engineers, have prepared plans for supplying several adjoining Vancouver municipalities with water. Initial cost, $500,000.

A by-law has been adopted by Longue Pointe to borrow $150,000 to construct a water system, the water to be supplied by the Montreal Water & Power Co.

A new 12-inch water service main is being laid on Proctor Street, Halifax. Larger mains will be laid on Gerrish, North and Morris Streets this fall.

The corporation of Lachine have just closed a contract with John McDougall & Co., Caledonian Iron Works, Montreal, for the purchase of a new pump for the aqueduct.

The request of the McClary Co., London, for a main on Nelson street was received favorably by the commissioners. The cost will be about $500. The main will be laid immediately.

E. T. Laverdure has been awarded the contract for the main sewer at Hull at $43,608, W. E. Martin's tender at $38,600 (the lowest) having been withdrawn because of a misinterpretation of the work required.

Sewers will be laid in the following Brantford streets: Gilkison, from Oxford to to Winnett; Rawdon, from Dalhousie to Chatham; Drummond, from Wellington to Chatham; Charlotte, from Wellington to Chatham.

The McKnight Construction Co., Toronto, have been awarded the contract for the first section of the New Liskeard, Whitewood avenue sewer at $8,468. The installation of the septic tank and continuing the sewer up Whitewood avenue will be left over until next spring.

Weston town council awarded contracts last week for the new waterworks system. The successful tenderers are: Contract "A," labor in laying out pipes, J. F. Connolly, Toronto; Contract "C 1," steel water tower, Toronto Iron Works, $5.040; Contract "D," all cast iron water pipes and special castings, Canada Foundry Co.; Contract "E," fire hydrants, sprinkling cranes, gate valves, and valve boxes, The London Foundry Co. The total cost of the work will not be less than $55,000.

General Building Notes.

F. J. Smith will build a $10,000 dwelling at Toronto.

W. Cope will have a $30,000 block erected at Saskatoon.

The Bank of Hamilton will build a branch at Roland, Man.

Dr. Holmes will erect at Vancouver a $30,000 business block.

The Imperial Bank will erect a new building at Kamloops, B.C.

A $30,000 addition is proposed to be built to the Halifax Y.M.C.A.

J. H. Williams, Hamilton, will build six houses at a cost of $8,000.

Smith & Kirkpatrick will build a house at Winnipeg, to cost $4,500.

The Bank of Toronto is erecting a large office building at Toronto.

J. J. Downey, will build at Toronto, three detached dwellings, to cost $10,000.

James H. Maher, is erecting an apartment house at Montreal, to cost $35,000.

A site has been procured for the new residence for the Lieut.-Governor at Edmonton.

A. A. Mitchell, Toronto, will erect two pair of semi-detached dwellings, to cost $14,000.

T. Oddson, Winnipeg, has taken out a permit for an apartment block to cost $31,000.

A permit has been issued to the Y. W. C. A. to build at Vancouver at a cost of $21,000.

A permit has been granted to J. C. Steele for a dwelling at Brantford to cost $3,000.

J. Madden, Souris, Man., has the contract to put up a new bank building at Souris, Alta.

The Fraternal Order of Eagles are to have a brick building erected at Coleman, Alta.

G. A. Monette, Montreal, is preparing plans for a presbytery to be erected at Laprairie, Que.

A building permit has been issued to J. McGraw for a dwelling at Brantford to cost $2,700.

The authorities of McGill University are considering the advisability of building dormitories.

Wilkins & Co., will erect three pairs semi-detached, brick dwellings, at Toronto to cost $12,000.

Morrison Brothers, Vancouver, purpose erecting in the spring a large apartment building.

A large summer house is to be built in connection with Antigonish College at Antigonish, N. S.

J. A. McRae has the contract for the erection of the new brick block for Jas. McGrady, at Port Arthur.

James Esson has let the contract to S. G. Brauch for the erection of a business block at Preston, Ont.

W. T. Jackman has started excavating for a new business block at Chilliwack, B.C., to cost $4,000.

A large addition is to be made to the Empress Hotel, in Victoria. The addition will cost about $75,000.

The contract for the Rookery Building at Winnipeg to cost $165,000 has been awarded to G. H. Walton.

J. Avery, Ladysmith, B.C., has been awarded the contract for the concrete work in the new convent school there.

W. W. Blair, Winnipeg, is preparing plans for a four storey office building to be erected at a probable cost of $100,000.

Plans have been prepared for a three-storey addition to the Revelstoke, B.C., Y. M. C. A. at an estimated cost of $15,000.

It has been decided to build an annex to the Royal Alexandria, Winnipeg, instead of an addition to the present building.

A lot has been selected at Goderich as the site for the Masonic Temple. It is proposed to have the foundation laid this fall.

The Bank of Hamilton has purchased a site adjoining the Y. M. C. A. building at Paris, on which they will erect a bank building.

The C. N. R. is negotiating with the Brandon Board of Trade in reference to the erection of an hotel on the company's land there.

The Y.M.C.A. are raising $50,000 in order to provide the necessary funds for the addition of two storeys to their Calgary building.

Plans are being prepared for an hotel to be erected at Winnipeg at a cost of $85,000. F. A. Meyers, Fort William, Ont., is interested.

Saskatchewan announce that a large addition is to be made to the Holy Cross Hospital, Calgary, at a cost of between $75,000 and $80,000.

The Winnipeg Y. M. C. A. will procure plans at once for a Central building and a branch in the north end, the two to cost nearly half a million dollars.

Recent building permits issued at Lethbridge include: J. K. Smith, residence, $2,000; W. H. Johnson, residence, $2,500; H. Byer, three residences, $7,-500.

A. D. McRae, president of the Fraser River Lumber Co., has awarded to the Gribble-Skene Co., the contract for a palatial residence at Vancouver to cost $100,000.

The C. P. R. are to build a large hotel at St. Andrew's, N.B. Plans have been prepared and tenders are now being called for, so that the work can start in the spring.

D. J. Young, Calgary, is erecting an $8,000 residence on Mount Royal; Supt. McCauly, of the street railway, a $4,-500 residence, and I. G. Ruttle, a $3,-500 residence.

A building permit was issued to W. R. Arnold covering the erection of a steel and concrete block at Vancouver. The building will be two stories in height and cost $9,000.

During the past week permits have been taken out at Victoria, for a three storey building for T. N. Hibben & Co., to cost $15,000, and alterations and additions to the Government Street building for E. A. Morris to cost $12,000.

Hon. Geo. A. Cox, Toronto, Ont., one of the directors of the Canada Life Association, announces that the company is having plans prepared for a business block to be erected at Vancouver at a cost of $275,000.

The Board of Directors of the Y.M.C.A. have approved of the purchase of a new building site at Montreal. It is expected that the contract for the erection of the proposed Westmount building will be let this fall.

S. Plante will build five houses at Montreal for $14,000. Jos. Beaudry will also erect there a dwelling for $12,000. Mr. Beaudry also got an alteration permit for $6,000 worth of alterations to his building at the same place.

Recent Winnipeg building permits include: W. R. Gorrell, dwelling, $7,000; J. C. Hicks, four dwellings, $2,500 each; Claydon Bros., apartment block, $45,-000; B. C. Cockshutt, dwelling, $4,000; H. C. Davidson, dwelling, $3,000; Smith and Kirkpatrick, four dwellings, $4,200 each.

Work has been started on the foundation of the Eastern Townships Bank building at Grand Forks, and will begin on the Royal Bank building there at once. Both contracts have been awarded to McDonald, Wilson & Snyder, of Vancouver, and both buildings are to be completed before the end of the year.

Recent building permits at Vancouver are:—W. J. Harrington, two dwellings, $9,000; Mrs. D. Draine, dwelling and stores, $2,400; W. R. Arnold, concrete building, $9,000; A. E. Burnett, dwelling, $5,000; Purdy & Lonergan, dwelling, $4,000; F. Bowser, brick addition, $10,000; G. A. Boult, dwelling, $2,800; W. L. Keate, bungalow, $3,000; Reiley Bros., dwelling, $2,800; H. P. Falls, dwelling, $2,000; R. J. Coleman, dwelling, $2,800; W. W. Stuart, dwelling, $3,500.

PLUMBING AND HEATING MARKETS

MONTREAL.

November 13.—Great activity is still noticeable in plumbing supply lines. Not only is there the usual rush preparatory to the closing of water navigation, but the local demand shows no signs of quieting down. Judging from the state of many of the buildings, work will be carried on well into the winter, and the customary falling off in December may not be so noticed.

Plumbers are reported as being well supplied with work, both contract and jobbing, and are well satisfied with their prospects.

The new brass list is now generally in force, but otherwise there is no change in the markets. The scarcity in soil pipe is not so pronounced, but some lines are still hard to obtain. Iron pipe is in somewhat similar a box. Heating lines are steady, and a good demand is assured for some time. Enamelware is firm. Generally the tone of the market is very firm, and further advances are anticipated in the near future.

SOIL PIPE—Although the shortage is not so pronounced as it was delivery is still very behindhand. Combined with the good local demand there is the usual rush before the close of navigation. The market is firm and we quote: light, 60 off; medium and extra heavy, 70.

LEAD PIPE—Good orders are coming in. Plumbers are not only buying for their immediate requirements but are stocking up a little. The market is steady and we quote: pipe and waste at 27½ off; traps and bends at 50; caulking lead, 5c per lb.

SOLDER—There is a good amount of solder going out, and with stocks in users' hands light, a steady demand is assured. Quotations keep at 19½c for half-and-half, and 18½c for wiping.

IRON PIPE—Delivery is still hard to obtain in some lines, and the general demand is as heavy as ever it was. Some cutting is noticed but we quote: ¼ inch black, 63; galvanized, 48; ⅜ black, 59; galvanized, 44; ½ black, 69; galvanized, 59; ⅜ to 4-inch black, 71½; galvanized, 61½.

RADIATORS AND BOILERS—There is still a rush on these lines, and manufacturers are hard pressed to supply the demand. With so many buildings uncompleted the demand is anticipated to keep up longer than is usually the case. We quote: Steam boilers, 60 and 10; hot water boilers, 50 and 10; wall and hot water radiators. 50 and 10; steam radiators. 50.10 and 2½ per cent.

ENAMELWARE—The demand is as active as ever, and jobbers are hard pressed to fulfill orders. Manufacturers are hard at work on orders, and have no time to think of accumulating any stocks themselves. The market is firm.

SCRAP METAL.—There is a strong movement in wrought iron and steel into the States with the result that Ontario is buying largely from this market, making the material scarce. These lines have been marked up $1. There is a good demand for zinc but other lines are quiet. We quote: Heavy copper and wire, lb., 11c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass 8c; light brass, 6½c; tea lead, 2¼c; heavy lead, 2¾; scrap zinc, 3c; No. 1 wrought iron, $12; machinery cast scrap, No. 1, $14; stove plate, $12; malleable, $12; miscellaneous scrap steel, $7.

METAL—There is a better tone to the primary markets with the result that tin and copper while unchanged are firmer. The buying has been very active. Ingot copper, 14c; ingot tin, 32½c; lead, $3.60.

TORONTO.

November 13.—Trading in all plumbing goods is very satisfactory, especially is this true of enamelware, which is going out, not only to the cities and towns, but also to the country places. Besides new work under construction, there is a great deal of old plumbing being replaced with up-to-date fixtures. Northern Ontario, generally, is responsible for a lot of plumbing work. Travelers on the Soo branch and the main line of the C.P.R. report splendid business in all the larger centres from Nort Bay westward. In Cobalt and Haileybury, plumbing is making enormous strides, nearly every building in these towns undergoing some sanitary improvements or having added some conveniences. Locally the plumbing trade is at its best. There is a great rush to finish up the majority of residences before the cold weather. There are sufficient large structures going up, however, to keep many master plumbers busy the whole winter through.

Prices hold firm, though unchanged. Malleable fittings seem to be slated for an advance, as at least one large U. S. supply house has withdrawn prices.

ENAMELWARE—Everybody appears to be wanting baths these days, and as yet the demand exceeds the supply. The medium grades are most sought after for reconstruction work. Closet combinations are a close second, and a good demand is also made for sinks. Most of the new houses going up are having laundry tub sets installed. All prices are firm. Laundry tubs are yet at 30 per cent. discount, and the best grade of low down combinations are $16 flat.

BOILERS AND RADIATORS — All heating engineers are experiencing difficulty in installing heating systems, so great is the demand for boilers, etc. The market is steady. Steamfitters are unusually busy. Hot water boilers and radiators are 50 and 10; steam radiators, 50, 10 and 2½; and wall radiators, 50 and 10.

IRON PIPE AND FITTINGS—Conditions since the opening of September prevail, the recent higher price not at all hurting business. Demand is principally for the smaller sizes. 1-inch black is $4.70; and galvanized $6.35. Cast iron fittings are 65, and malleable 40. In regard to the latter, however, there is an indication of higher prices, as one large U. S. supply house has withdrawn its list.

BRASS GOODS — Still improving is this line, with prices unchanged. Compress work is at 65 per cent. for standard, and 60 per cent. for high-grade. Filler work is at 70 per cent.

LEAD PIPE—There is somewhat of a revival in lead pipe this week, though of late this has been some what spasmodic in character. Taking the year all through, trading in lead pipe has been fair, though lead uses are decreasing from year to year.

SOIL PIPE—Bumper business is again being done, manufacturers stating that they are rushed with orders, and are running their plants to capacity. Prices are very firm. Light pipe is 60 per cent., with fittings, 70 per cent.

SOLDER—Steady and good sales have been made during the past fortnight, the easier prices having induced buying. Wiping runs from 18c to 18½c, and half-and half from 18½c to 19c.

STANDARD SANITARY BUILDING.

Work on the construction of the new plant of the Standard Sanitary Mfg. Co., on Royce Avenue, Toronto, has been begun. The foundations of four buildings have been excavated and the work of erection will continue all winter, all the buildings being steel frame with reinforced concrete fireproof construction.

There are to be six buildings in all, an enameling building, 60x150 feet; a 3-storey mill building, 65x50 feet, for making enamel; a 6-storey warehouse, 65x200 feet; a 4-storey pattern building, 65 x 130 feet, and a foundry and a cleaning house for castings, the dimensions of which have not been decided.

The company are doing the work of construction themselves and Frank Painter, who is to be superintendent of the plant, will remove from Pittsburg to Toronto about Dec. 1.

Condensed or "Want" Ads.

BOOKS FOR PLUMBERS.

PRACTICAL HINTS ON JOINT WIPING, for beginners in plumbing.—This book contains two original articles on joint wiping by experts, together with a selection of letters and articles on various important phases of the subject. 66 pages, 41 illustrations. Price 25c.

FIFTY PLUMBING CHARTS, showing how modern, up-to-date, sanitary plumbing should be done. A lay-out of 50 jobs is shown, giving sizes of all pipes, heights of all fixtures, every joint, every piece of material and every fixture. 50 pages, paper bound. Price 25c.

MACLEAN PUBLISHING CO., Technical Book Dept., 10 Front Street East, Toronto.

SITUATIONS VACANT.

TRAVELING SALESMEN WANTED for Western Canada. Those accustomed to estimating on steam work preferred. Splendid opportunity for right men. Write or call on Waldon Company, Winnipeg, Heating Engineers. (tf)

MISCELLANEOUS.

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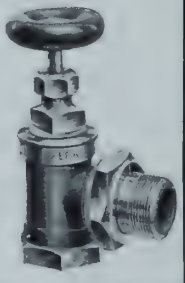

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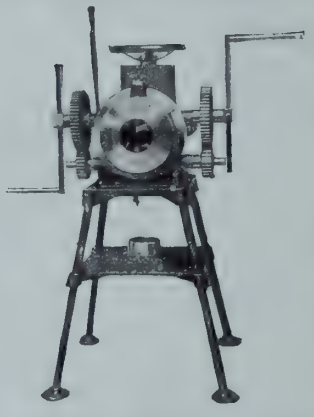

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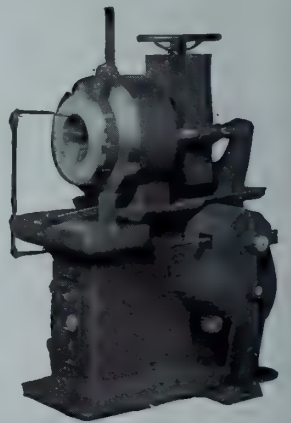

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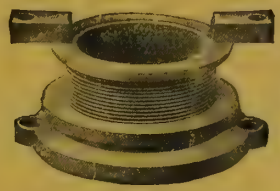

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Plate F
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Vol. III, No. 23 (New Series). Publication Office : TORONTO, DECEMBER 1, 1909. Old Series, Vol. XXI. No. 23

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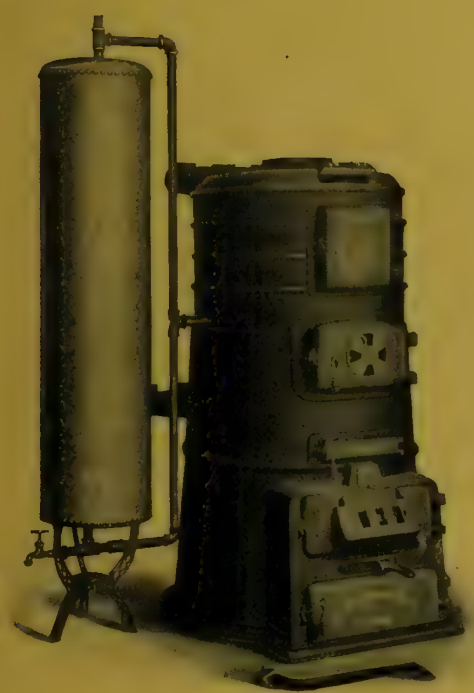

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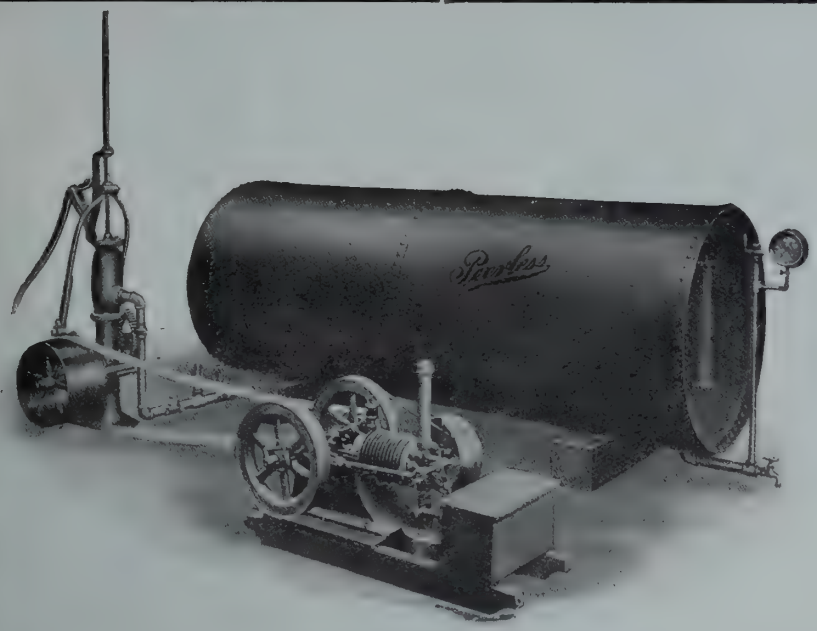

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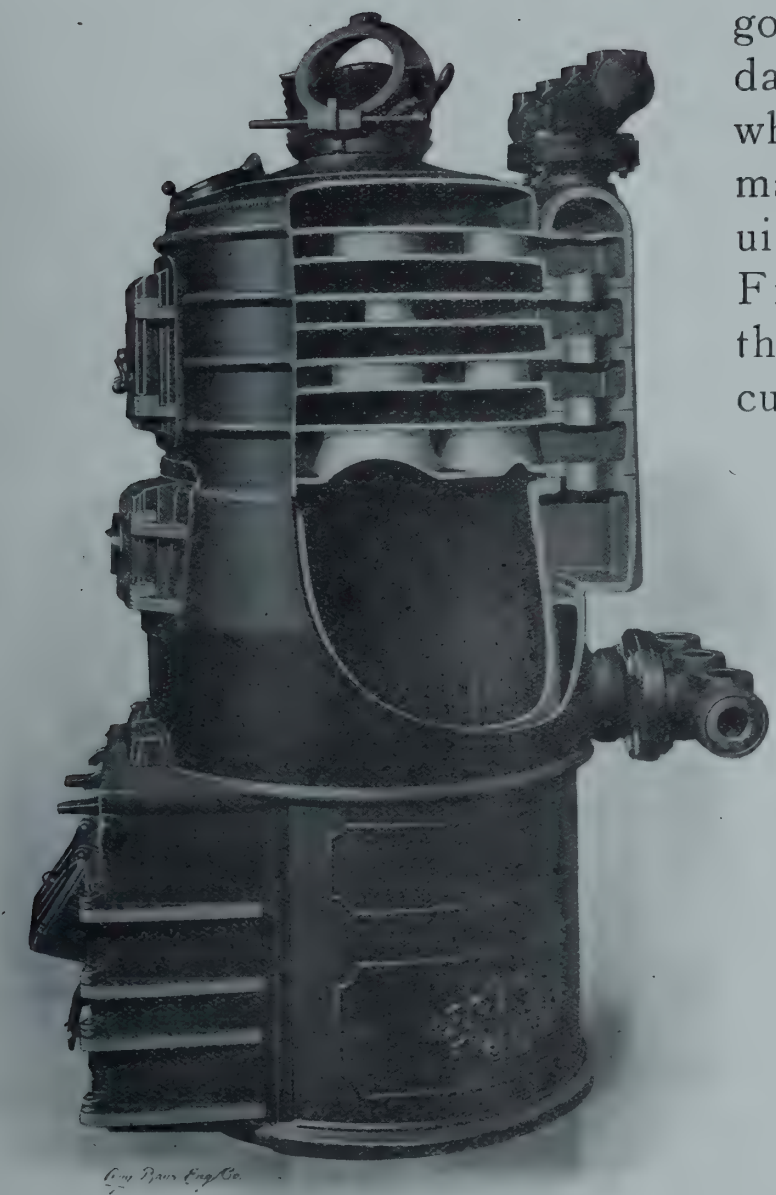

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TORONTO, DECEMBER 1, 1909

SHOULD COMPETITION BE UNRESTRICTED?

The Toronto Globe, in a leading editorial on Nov. 29, takes issue with The Plumber and Steamfitter for its argument in favor of establishing a system of examinations for master plumbers and journeyman in Toronto in order to raise the standard of plumbing work done in this city. The Globe, under the heading, "The Plumbing, Not the Plumber," says:—

"There is a strong plea in The Plumber and Steamfitter in favor of increasing the license fee for master plumbers, and requiring all masters and journeymen to pass examinations. The ground for this plea is the inadequacy of the present inspecting staff and the consequent danger of insanitary or otherwise defective work. This would be seeking a desirable end by an objectionable and useless means. By all means let us inspect plumbing, and if the staff is inadequate let it be increased, but let us leave the plumber alone. If his work is defective in material or workmanship let us see that he tears it out and makes it good, and if he breaks any by-law let us see that he is properly punished. Further than this it would be not only futile, but highly improper to go. If the city were to impose a license fee, that would make the plumber a part of the municipal taxation machinery, and if all kinds of meddlesome examinations were imposed on him, it would still be quite as necessary to inspect every job as it is at present. Neither a high license fee nor mechanical competence is any guarantee against scamped work. If it were practical to examine a plumber's moral conscientiousness, it might be possible to secure the safeguards The Plumber and Steamfitter desires. But no one has yet suggested such an examination, a manifestation of reluctance at which the public should duly marvel.

"This demand for needless and useless restraints reveals the familiar tendency to regard restraints as primarily in the interests of monopolies instead of in the interests of the public. No interference with business or industry is justified except so far as it is absolutely necessary to insure public safety. Judged by this standard the examination of master plumbers is seen to be both futile and unwaranted. Such results as it would have would be results that should carefully be avoided. It would interefere in many ways with the natural course of business that establishes prices on a competitive basis, and would thus help toward the creation of an undesirable monopoly. Nor would it lessen the necessity for a thorough inspection of the work, the only inspection that is useful or can be justified. If a joint stock company were to engage in the plumbing business The Plumber and Steamfitter would perhaps require that the president or some of the directors be able to wipe a joint. It would be no more absurd to require them to make an athletic record in the hundred-yard dash or the running high jump. The object is to impose an obstacle seen on reflection to be needless and useless, but certain to restricts the business to a favored few.

"As to a high license fee, it would merely be an addition to the pernicious system under which a considerable amount of indirect and more or less concealed taxation is collected from the people of Toronto. Every dollar collected would cost the public many dollars. The proper system is to inspect the plumbing, but not the plumber. His capacity is no one's business, but his own. The work he turns out is a matter for public supervision. If the present inspecting staff is inadequate let it be sufficiently increased. The matter is of primary importance, and the conditions hinted at by The Plumber and Steamfitter should not be allowed to develop."

The Globe's argument against examinations is that they are unnecessary, if the inspection is thorough. The plumber should be untaxed and unexamined as to fitness. He need not learn the trade at all—let anyone who wishes do plumbing work and everything will be lovely, if there are sufficient inspectors appointed to do police duty. The Globe has admitted that doctors and druggists—those who endeavor to cure disease—should be subject to examination, but it claims that master plumbers—whose work, if properly done, prevents much disease—should have no standards for their work.

The T. Eaton Co. was recently compelled to form a separate joint stock company, with a qualified college graduate as manager, in order to conduct a drug department in its store. But when it wanted to become a master plumber it merely paid $1 for a license and no one of its staff was questioned as to fitness to do plumbing work. The druggist may sell poison, which might kill one person. The unqualified plumber may do work in such an unsanitary way that hundreds of sales girls may have their health undermined. It is better, The Plumber and

Steamfitter argues, to have more intelligent plumbers and fewer policemen, than to have more policemen and fewer intelligent plumbers, as the Globe argues. An ounce of prevention is better than a pound of cure.

The Globe also objects to a high license fee—something that the Plumber and Steamfitter has not argued for, our suggestion being to raise the fee from $1, as at present, to $10, the usual fee charged in American cities much smaller than Toronto, being $50 annually. The Plumber and Steamfitter has proven the $1 license fee to be a farce, men doing large jobs under the shadow of the City Hall without obtaining a license, and others doing hundreds of jobs throughout the city without taking out a license for the year. We say the license fee should be increased or it should be abolished altogether and bonds required from master plumbers, ensuring the satisfactory completion of contracts undertaken by them.

The Globe apparently has for its ideal an anarchistic state in which each will be a law unto himself, but it is willing to concede that in this age of profit-making (or lack of it, so far as much of the plumbing work is concerned) policemen are needed. But if education will make it possible to decrease the number of policemen, why not establish the system of educational examinations. The Globe may have an argument against a high license fee as monopolistic, but we cannot see any reason whatever to its opposition to plumbers examinations.

Commenting upon this matter the Metal Worker (New York), recently said:—

> "Selfish interests frequently criticize the method which has received the approval of health boards throughout the entire United States for safeguarding the public health and comfort by requiring proofs of competency on the part of those aspiring to do plumbing work. Unthinking outsiders wish to remove the restrictions and place the whole field of plumbing work open to the lowest bidder, regardless of qualifications. They seem to assume that such a step would be in the interest of the public, particularly as promising a cheapening of the work and thereby saving some real hard cash for property owners. There is little room for two opinions regarding the result, but at what cost. The best informed, for example, participants in the meetings of the American Society of Inspectors of Plumbing and Sanitary Engineers, state that plumbing regulations should be more stringent and the examinations for plumbers should be more searching; they see so many examples of botch work by incompetent men, scamp work by unscrupulous men, and the need of expert supervision over conscientious men. The members of this society are peculiarly well adapted to give a disinterested opinion. They are selected for their experience and knowledge, and recognize their true duty to their superiors, the citizens of the commonwealth. Under these circumstances the periodical attempts to disparage and repeal laws providing for a searching, yet fair examination of plumbers and to obstruct the enforcement of regulations governing the manner in which plumbing work shall be done are, pernicious and without sound basis for support. That some modification of prevailing design in plumbing work might reduce cost seems certain, but it will be made by experts, and not to save money for the mercenary or to afford opportunities for the incompetent."

In advocating the establishment of examinations the Plumber and Steamfitter aims to benefit every branch of the trade — manufacturer, supply man and master plumber. The creation of a higher standard of work would (a) increase the demand for high-grade goods, and (b) guarantee their proper instalation. The elimination of the unqualified would mean safer credits for the supply man, less price-cutting and fewer failures. And as the losses of supply men through bad debts must be paid by the successful master plumbers, the latter would also benefit by having less losses of this kind to make up.

In another column particulars are given of the recent establishment of examinations at Columbus, Ohio, and Belleville, Illinois. No more practical method could be adopted of improving the standard of the trade and every branch of the trade should unite in establishing a system of examinations in Canadian cities.

TORONTO MASTER PLUMBERS ORGANIZING.

A quiet movement has been going on in Toronto during the past month looking toward the reorganization of the master plumbers of Toronto and from the headway already made, prospects are bright for enrolling a large percentage of the master plumbers who have shops and who are the real backbone of the trade in the city. The sidewalk plumbers who do business in woodsheds and shacks in lanes cannot, of course, be expected to join any organization having for its object the improvement of trade conditions.

At a meeting held on Wednesday, November 24, about two dozen were present and the names of about a dozen more were enrolled as members of a Master Plumbers' Section of the Retail Merchants Association, the annual fee being placed at $5, this to include hall rent, sending out notices and canvassing for members. The meetings are to be held every second and fourth Thursday in the Retail Merchants Association rooms, 21 Richmond street west, the same location as the old Master Plumbers Association rooms.

At the meeting on Nov. 24, officers were elected as follows: George H. Cooper, chairman; J. R. Seager, first vice; H. G. Hicks, second vice; W. J. Mason, treasurer; and J. T. Matthews, secretary. These gentlemen, with R. J. Shannon, vice-president for Ontario in the National Master Plumbers' Association, intend making this effort to organize successful and they should be assisted by all who want to see trade matters improved.

LETTER FROM VICE-PRESIDENT WALSH.

To the Master Plumbers in the Province of Quebec;

Gentlemen,—You are no doubt aware from your lecture in the Convention Number of The Plumber and Steamfitter that the National Association of Master Plumbers has undertaken a most praiseworthy work, namely, the formation of a Canadian Society of Sanitary and Heating Engineers.

Any information desired as to the object and probable constitution of this society will be gladly furnished by the national president or secretary to all master plumbers of this province who are, without exception, not only invited, but expected to join.

Already a majority of master plumbers have signified their intention of becoming members. If you have not already done so, please mail at once a letter or postal card to the undersigned, stating your intentions.

An early reply will be appreciated and acknowledged by

J. E. WALSH.

35 Vitre Street West, Montreal, Nov. 11, 1909.

Defects in Winnipeg's Sewage System

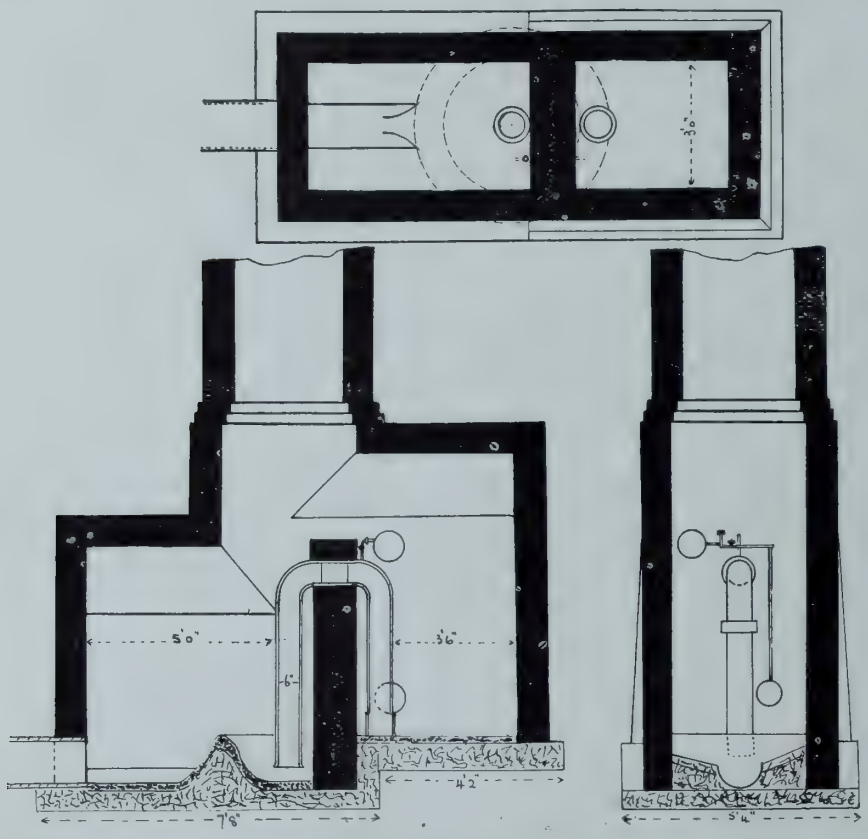
Sewers Discharge Solids on River Banks and Befoul the Atmosphere—Rank Odors Also Emitted From Sewer Openings Throughout the City—Improvement Being Made in an Endeavor to Overcome the Evils Complained of.

By L. C. Harkness.

Winnipeg Sewer Cleaning Problem.

Perhaps there is no problem before the civic Government of Winnipeg so important and far-reaching as the maintenance and construction of proper sewer facilities.

The Board of Control have had it brought to their attention many times, that many of the trunk sewers in use are not laid in the proper direction, and that many sewers in the city give out at every manhole, ordors that are almost intolerable, and manifestly unsanitary, and dangerous to to the public health.



Flush Tanks Used in Winnipeg's Sewer System.

The Public Works Department, however, have been working on a practical solution of the difficulties.

Sewage on River Banks.

Some of the sewer mains empty into the Assiniboine River at points where the refuse must of necessity be carried through the main portion of the city and where the banks accumulate more or less of the passing filth. In conection with this, it is maintained that the sewer mouths are not properly constructed so as to throw the deposits well out into the current, but the filth is allowed to fall from the sewer and spread down the incline of the shore to the water. The other condition is that of the escaping odors from the sewer manholes as the deposits pass down the streets of the city.

The first problem mentioned has been more recently brought to the attention of the governing body and the citizens, and it is believed that proper steps have already been taken to remedy the condition. The city engineer has called for estimates as to the cost of lowering and extending the sewer mouth so that deposits may be run directly into the current.

With regard to having the sewerage carried through the city in the river nothing has been done, but it is thought that when the solids are carried into the currents that they will not be deposited along the banks to such an extent as before. The work of deepening and widening the river with a view to increasing the current flow has been spoken of but the cost perhaps figures in the delay.

Bad Odors from Sewers.

The work of doing away with the loathesome odors from the city manholes has been a problem concerning which the city has been worrying for some years. Just why this nuisance should exist more in this city than elsewhere is not known. The assistant city engineer states that there are no known reasons why this thing should be. There is no fault in the construction of the sewers. Experts have pronounced the sewers as far as construction is concerned, as perfect as any other system in Canada. The material is almost all cement and the fall is great enough to carry the flow.

Flushing the Sewers.

That which would appeal to the most rational as to the best method of cleanliness has been adopted by the city. Flush tanks to the number of 419 have been installed at the head of sewers. Hose flushing has been carried on unceasingly in an endeavor to wash out all stagnant accumulation which might cling to the sewer walls. The installation of four sewer ventilation devices have been made, but as yet they are only tests and it is yet to be made known whether the city engineer's department will recommend the adoption of one or all of these devices for the deodorizing of the escaping sewer air.

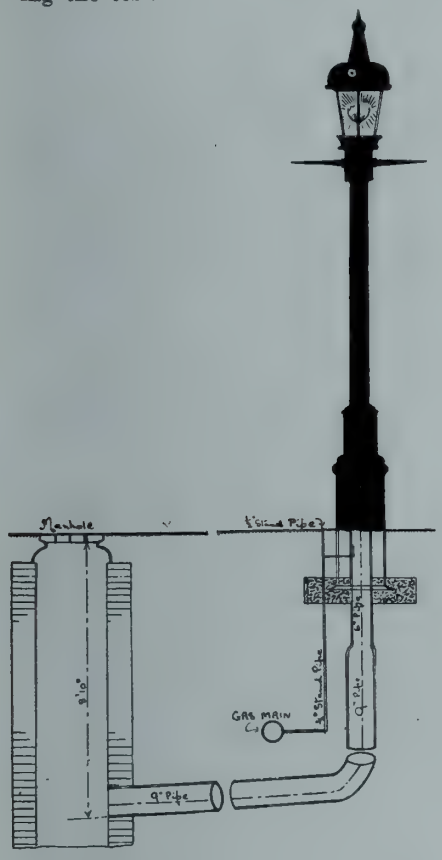
Burning Sewer Gas.

According to the report of the city bacteriologist, Dr. Leeming, for the year 1908, the two Webb lamps, one of which is shown in the accompanying illustration, and the city ventilator were quite satisfactory. He reported that when the wind was blowing from the south and south-east there is practically no air passing through the vents of the Webb lamps. A test of the air which passed through the lamps proved that the bacteria and odor was completely destroyed. Dr. Leeming's report of the bacteriological test conducted on the city sewer ventilator which is placed at the corner

of Charlotte and Bannatyne avenue is as follows:

City Bacteriologist's Report.

"I exposed plates of blood serum, gelatin, and agar-agar to the sewer air before and after it passed over the burner in the ventilator. The plates were exposed for the period of one (1) hour. As we had not an Anemometer with us, I am unable to state accurately how much air passed over the plates, but the Plumbing Inspector informed me that 2,000 ft. per hour was the average volume, so we can assume that that amount passed over the plates during the test.



Webb Lamp Used to Ventilate Sewers.

"On those plates exposed to the raw sewer air, there was an innumerable growth of bacteria. The number was so great as to be classified as "uncountable." I have not differentiated the various micro-organisms, as I thought that you would not particularly desire such information.

"On the plates exposed to the burnt air, i.e. to the air after it had passed over the burner, there was absolutely no bacterial growth, proving the air to be sterile.

"I found the temperature of the air, as it emerged at the outlet, to be 270 degrees F. Of course, the temperature of the air immediately after passing over the burner would be considerably higher, and such a temperature would be sufficient to kill all bacteria.

"The burning of the air also destroyed the foul odor characteristic of sewer air.

"My experiments lead to the conclusion that the ventilator is an efficient means for destroying micro-organisms present in sewer air, and for deodorizing the same."

J. H. LEEMING,
City Bacteriolgist.

Winnipeg Feb. 24, 1909.

A Deoderizing Machine.

Since the instalation of the Webb lamp and the city sewer ventilator, another device known as the Beeman & Kelly deodorizing machine has been put into use, but as yet no report as to its merits has been submitted.

It is possible that nothing will be done in the way of arranging for an increased number of deodorizers until the end of the year, after similar tests have been made as those of last year. It is believed that the use of the deodorizers is the only solution of the bad odor problem. The tank flushes are kept constantly in use, and the hose force are busy every night, yet it is not exactly known just what these contribute toward the putting down of the odors. The expense in connection with the immence flushing is very great, since according to the annual report over 4,000,000 gallons of water is used monthly. The deodorizers are comparatively reasonable in price, the total cost of all instalations, including capital cost and cost of maintenance is about $750 per year. Of course, the flushing will have to be continued, but perhaps more moderately after the deodorizers are installed.

Sewer Gas an Exploded Notion

Old Idea That Sewer Air was Dangerous to Health is Claimed to be Disproved by Good Health Enjoyed by Plumbers — Information gathered by Investigating Experiences in Europe and America.

By Charles H. Denison.

The name of the party who invented the sewer gas fable is probably lost among the shades of the past, and no one is noticed coming forward claiming to be the father to the term "sewer gas,"

Within the past fifty or sixty years great has been the stir among doctors, inspectors, sanitarians and plumbers as to the properties this so-called gas did or did not possess.

It was heavy and would penetrate the earth; it was light and would ascend to the clouds. It would work itself through brick walls and poison its unfortunate victims before they could "touch wood," or "cross their fingers."

In times gone by (yes, and even today in some localities) a nose which had good smelling qualities was a distinct asset to a plumber.

"Mr. Brown, will you come up and see what is the matter with our bathroom. It smells terribly." Brown generally complied and after a more or less thorough investigation, accompanied by an audible sniffing of the air in the room, turned to the owner with a wise look and impressively pronounced the two fatal words, "sewer gas." Immediately the householder got "cold feet," and ordered the system ripped out and another installed, which was supposed to be sanitary.

Only the other day I read an account of where a man fell into a sewer and was "poisoned by sewer gas." That there was gas of some kind in that sewer, I do not dispute; but that **the gas which killed this man was "sewer gas,"** as the term has been understood for the past thirty or forty years, I do not believe. The man might have been asphyxiated, as has been the case of men in the sewers of certain large cities.

Figures From Old London.

Several years ago the metropolitan board of works in London investigated the extent to which sewer men were affected by typhoid fever. Now, this report showed that five inspectors had been employed somewhere from 23 to 49 years. None of these inspectors ever contracted typhoid. Out of 116 men employed in cleaning the sewers, not one had had the fever, and some of these men had been doing this work for over 30 years. In the cases of nearly 300 men employed in or around the sewers or connected with the pumping stations, ventilators, etc., only two had ever had typhoid fever.

Now, it has been stated sometimes that "sewer gas" was a product of our

system of sewage and that this gas was laden with the germs of various diseases, such as typhoid, scarlet fever, and diphtheria, and this idea has been spread broadcast over different countries and has many times, in various ways, worked great harm to the plumbing business.

5,000 Sinks Without Traps.

The report of the board of health of a certain city in the United States shows, that at one time a few years ago, something like 5,000 sinks without traps were allowing the "sewer gas" to escape into the residences of the city; yet, instead of the city being swept by an epidemic, the number of contagious diseases had been decreasing for ten years.

A certain authority who had investigated the evidence in regard to "sewer gas" relative to the City of Glasgow, said: "The air from the sewer when it is properly ventilated, is much better from a chemical point of view than the air of crowded schools or houses, or even the air of the houses in which one-half of the population of Glasgow lives, and that "to many of the people it would be of great advantage to be permitted to live in an average sewer temperature, rather than in the air of their own houses."

In view of such a statement as the foregoing, and supported by some others which will be given later on, it would seem as if both the plumber and our modern system of sanitation are viewed entirely in the wrong light by the general public who are not fully conversant with the facts.

Would it not be a good plan to get some books, or articles upon the subject and read up a little in order to be able to discuss the subject in an intelligent manner? One would then be in shape to talk to the man who objects to having a plumbing system installed on account of the supposed dangers of "sewer gas."

Plumbers a Healthy Lot.

Look the ordinary journeyman over from the physical point of view, and observe how they rank when compared in this respect with the men of many other trades, or those who work in factories. You will find that the average journeyman plumber is a pretty husky speciman of manhood, and if there was as much in this "sewer gas" theory as many have claimed, the plumber would certainly show the effects of it in his constitution.

The general ideas of sewer gas are deep-rooted and will die hard, even in the mind of the plumber himself, from mere force of habit, and the light will not begin to dawn until a due amount of investigation, reflection and common sense are applied. As a matter of fact, there is more danger from the germs in the dusty street of any modern city, than there is from whatever gas or gases there may be in its sewers.

Investigations in States.

Some of this information comes from personal observation and experience over a large extent of territory, and some from the investigations of others, notably that of C. E. T. Winslow, who conducted a series of experiments for the Master Plumbers' Association of the United States. From the results shown in these investigations there is small probability of bacteria being carried through the house drains. Investigations were conducted with the view of gathering evidence which would dispell the idea from the mind of the public that "sewer gas" is the direct bearer of the disease-bearing microbes. It had been shown before this, however, that "the air of sewers, under normal conditions, was particularly free from bacterial life, due, no doubt, to the retention of the germs by the moist walls above the liquid." Special apparatus was used for conducting these experiments, and it was found in one instance that "with a suction corresponding to a flow of free air through a pipe of 620 feet per minute bacteria were lifted from the trap and carried fifteen feet in the air. The suction force used, it is stated, was greater than would occur under any ordinary circumstances in a drainage system.

The conclusion reached as the result of these investigations was "that with a strong suction sewage bacteria and intestinal bacteria may be taken up from the sewage in the trap or on the sides of a house drainage system and carried to some distance, at least 15 feet, through the drain. Air drawn over the surface of sewage at rest in the bottom of an unsealed trap failed to show any important increase in the bacteria in the drain above. When air was drawn through 2½ feet of pipe through which sewage had been run, there was distinct evidence that bacteria were carried from the wetted area into the upper sections of the pipe. * * * Germs are carried into the air of a house drainage system from its traps or wetted surfaces only by a suction equaling a current of air of 600 feet per minute (which could hardly be exerted under any ordinary conditions) * * * and it would seem, therefore, that the carriage of disease germs from the air of a house drainage is an improbable contingency, * * * and in the light of all previous evidence, the results warrant the conclusion that the chance of direct bacterial infection through the air of drains and sewers is so slight as to be practically negligible."

Dangers Greatly Magnified.

Many other experiments might be quoted from this interesting article, and instances given from other authorities who have investigated this subjest in the past few years, showing that while "sewer gas" is unpleasant, the dangerous effects attributed to it have been distorted and greatly magnified, and in some instances existed only in the mind of the doctor, plumber or health officer.

Would not the average plumber occupy a much more commanding position in life if he did not harbor the belief of other days and excite the popular mind to fear along these lines?

It is of the greatest importance of all to know the true facts in the case, and it is certainly up to the plumber to inform himself along these lines. He should assist in every way possible in obtaining information upon the subject and not be afraid to state the most convincing arguments upon the subject which will tend to clear the minds of the public in regard to previous errors of belief.

PLUMBING TRADE PATENTS.

The following is a list of Canadian patents issued by the Canadian Patent office on Nov. 9, 1909, relating to plumbers' and steamfitters' appliances, and furnished by Fetherstonhaugh & Co., Ottawa :

121720. J. M. Fleming, Ottawa, automatic regulating means for smoke consumers.

121742. L. M. Lancaster, Philadelphia, hydrants.

121743. M. Leblanc, Paris, France, jet condensers.

121755. J. Mulherin, St. Louis, devices for removing obstacles from drain pipes.

121778. C. H. Simmons, Chicago, valves.

121794. E. P. Wilton, Wrightsville, Pa., safety faucets.

121804. W. E. Sharp, Chicago, angle cock supports and locks for air brakes systems.

121836. M. P. Osbourn, Merchantville, N.J., valves for heating apparatus.

A curator has been appointed for Stevens, Duquette & Co., plumbers, Montreal. The assets of the firm will be sold.

The Canadian Bronze Powder Co.'s works at Valleyfield, Que., have an equipment for the manufacture of bronze and aluminum castings. The factory also affords accommodation for a jobbing iron foundry.

A Serious State of Affairs

A Hamilton master plumber draws the attention of the Plumber and Steamfitter to an editorial in the Hamilton Spectator of Nov. 25, under the caption, "This is Serious," and reading as follows:

Commenting on the renewal of the local agitation for the appointment of a plumbing inspector, Plumber and Steamfitter in its last issue makes some statements of serious enough importance to warrant the attention of the city authorities. Says The Plumber and Steamfitter:

"If Hamilton is ambitious to be known for its slowness in adopting modern sanitary precautions it has already achieved its aim for, in the plumbing trade, at least, Hamilton is known as a city where 'everything goes.'"

"No plumbing by-law is in force and there is no plumbing inspector, consequently it was not surprising to recently hear a manufacturer of plumbing goods make the statement that he always had a market in Hamilton for any goods he could not sell in other Ontario cities. And the further statement was made that Hamilton was about the only place from which orders came for a certain kind of light weight goods only made when ordered.

"It ought to be easily possible to verify or disprove what is here alleged in respect of Hamilton and its plumbing situation, and if it is found to be correct that this city is being made a dumping ground for defective and shoddy plumbing goods, it will certainly be the business of the authorities to prevent, if possible, a continuance of so undesirable a condition of affairs.

"It may be that a plumbing by-law with the necessary officer to see that its provisions are regularly enforced, would cost the city something, but who can tell, if the conditions are as has been stated how much greater has been the financial loss to the citizens owing to the absence of these safeguards, to say nothing of the possible loss of life that might be traceable to the same cause."

The correspondent criticises The Plumber and Steamfitter, stating that our article brings the trade into disrepute and that he does not use defective and shoddy plumbing goods in his contract work. He admits, however, that prices are cut so low that it is difficult for him to make ends meet and use good materials.

There's the point. The Plumber and Steamfitter is well aware that many Hamilton plumbing firms have endeavored to maintain high standards of work in the face of extremely low prices for their labor and materials. But the absence of a code of plumbing regulations and a plumbing inspector has made it possible for shortsighted and unscrupulous firms to do such shoddy work and scamp the materials so freely that self-respecting firms have been forced to cut prices to meet the unfair competition.

The trade has been brought into disrepute—not by the publication of an editorial drawing attention to a bad state of affairs—but by the master plumbers themselves, they having allowed their city to go along year after year without the usual regulations and inspection called for in every city of similar size on the North American continent.

The Spectator is right in stating that it would be cheaper to appoint a plumbing inspector than to continue to be a dumping ground for shoddy materials. But an inspector is almost useless without a plumbing by-law. The Hamilton master plumbers should form a committee to study the plumbing by-laws of Cleveland, St. Louis, Rochester, Toronto and other cities and recommend a plumbing by-law, a set of examinations for masters and journeymen, and a moderate license fee or bond payable by plumbing firms.

As the Spectator has pointed out the citizens of Hamilton are losers by having shoddy plumbing materials installed in their houses, etc. They pay for what they get, no doubt, but a slightly higher price would mean a far higher quality. The master plumber stands to lose by the damage done to his reputation by installing poor quality goods, and the supply man and manufacturer is certainly not a gainer from supplying a demand for light weight soil pipe, nameless closets and non-trade marked fixtures, when he might have a trade in high grade goods.

Hamilton should begin by appointing a thoroughly competent inspector who can work with the master plumbers in drafting a modern by-law.

PLUMBERS' EXAMINING BOARD.

All journeymen and master plumbers at Columbus, Ohio, hereafter must pass an examination and secure a certificate from the examining board provided for by recent city ordinances. The examining board is to consist of the health officer, the building inspector and three other members, two to be master plumbers and one a journeyman plumber, to be appointed by the mayor. The three appointed members are to receive $5 for each day or part of a day they are in the service of the city. The ordinance also provides for a secretary of the board, who will also receive the same compensation. A license will be granted without examination to all masters and journeymen plumbers, who are at present engaged in business in Columbus, but all who wish to begin business after the ordinance goes into effect will be compelled to pass the examination and pay the license fee. After the first year every plumber in the city will be compelled to renew his license and pay his fee each year. The license for a master plumber will cost $50, with $25 for each yearly renewal. A license for a journeyman will cost $5, and the same amount for each annual renewal. The board is impowered to revoke a license at any time for incompetency. Each master plumber engaging in business will be required to file a bond of $5,000 for the faithful performance of any contract he may undertake. A fine of from $5 to $500, or six months' imprisonment, is provided for violation of the ordinance.

An ordinance creating a Board of Examining Plumbers has been passed at Belleville, Ill. The ordinance provides that all plumbing, sewer connections, ventilating systems, etc., be done under the direction of the Examining Board and in accordance with the provisions of the ordinance, the measure going into effect on November 1.

The Examining Board is to be made up of the president of the Board of Health, one master plumber and one journeyman plumber. It shall be the duty of the Board to examine persons who engage in plumbing work in practical plumbing and ventilation. No contractor or journeyman plumber shall be permitted to work unless he holds a certificate issued by the Board. The fees will be $50 for a master plumber and $1 for a journeyman plumber. Failure to secure a license subjects the person to a fine.

An accident was caused at Montreal by a plumber making some repairs in the kitchen of Mme. J. Levert's house. He lighted his gasoline torch, used for heating the solder, and carelessly set it down on the hot stove. In an instant it had exploded. Mme. Levert's clothes were set afire and she rushed out on the balcony. In her alarm she had almost thrown herself to the ground when she was saved by her son. The house, the end one of a block, was so severely damaged that Building Inspector Chausse ordered an enclosure to be built about for the safety of passersby, while the occupants were all ordered to move. Windows were also broken in surrounding dwellings.

Plumbing By-law Recently Adopted at Saskatoon

Code Regulating Plumbing Work Adopted by the Saskatoon City Council on June 19, 1909.

Application.

1. That before proceeding to construct, re-construct or alter any portion of the plumbing, drainage, ventilation or water supply system of any building, the owner or his agent desiring to construct the same shall file in the office of the city engineer, or of such other officials as may be appointed for the purpose, an application for a permit thereof, and such application shall be accompanied with a specification or abstract thereof in a blank form prescribed for this purpose by the corporation.

2. That where the city engineer considers it necessary to clearly show proposed plumbing work, a plan of the same shall also be filed with the application by the owner.

3. That each application shall give the street, the house number (if any), the name of owner and tenant, and shall state the character of the work to be done, the sizes of the pipes, traps, and the pattern of fittings and fixtures, the location of bathroom, lavatory, etc., and shall show the ventilation and lighting of same, the proposed disposal of roof water, and the method of draining cellar.

4. That this plan shall be legibly drawn on paper or tracing linen and shall be annexed to the specification. A blue print will be accepted. It is suggested that the plan be drawn on a scale of eight feet to one inch, but it is not essential that the plan be drawn to a scale.

5. That with each application shall be deposited the sum of two dollars to cover the cost of inspection and entering records, and if there be more than one soil pipe or four fixtures, an additional dollar is to be deposited for each additional soil pipe and a half dollar for each additional fixture.

6. That if the Engineer finds that the plan and specifications do not conform with this by-law, he shall not issue a permit and it shall be unlawful to proceed with the work.

7. That a permit shall be granted or refused within three days from the time of filing of the application, and if granted it shall be valid for six months from date of issue.

8. That after an application has been approved no alteration or deviation shall be allowed except on a written application of the owner, or agent of the owner, and with the approval of the engineer.

9. That no master plumber, plumber, or workman engaged by the owner of any building to construct, re-construct or alter any portion of the drainage, ventilation or water system thereof, shall do any work in connection with such construction, reconstruction or alteration at or upon any such building until such master-plumber, plumber or workman has satisfied himself that the owner has obtained a permit for such work, as required by this by-law.

10. That the engineer shall be notified by the plumber when any work is ready for inspection, and all work shall be left uncovered and convenient for examination until inspected and approved of, which inspection shall be made by the engineer within two days after receipt of notice, not including the day on which such notice is filed, the result of the inspections being recorded in a book kept for the purpose at the engineer's office.

11. That in new plumbing works the pipes and traps shall be tested by sealing all the openings except the upper end of the soil pipe, and filling the complete system with water.

12. That in old or existing plumbing work the system shall be tested by the smoke test or by the peppermint test, as the engineer may require, after being fully exposed, if the water test cannot be applied.

13. That the sealing plugs and all apparatus, materials and labor necessary for making any of the foregoing tests shall be furnished by the plumber executing the work.

14. That if the plumbing be not found satisfactory upon the first test, a reasonable time will be given the plumber in which to make the necessary changes, repairs or renewals, when the work will be again tested and inspected by the engineer.

15. That when the work has been fully tested by the engineer and found satisfactory to him, a proper certificate of inspection and testing will be granted to the plumber if so demanded by him, within thirty days from completion of work.

Materials and Workmanship.

16. That all materials shall be of the best quality and free from defects; all work executed in a thorough and workmanlike manner, subject to the inspection, supervision and approval of the engineer.

17. That cast iron soil and wastes pipes shall not weigh less per foot than as follows:

Diameter.	Standard.	Extra Heavy.
2 inches.....	4 pounds	5½ pounds
3 inches.....	6 pounds	9½ pounds
4 inches.....	9 pounds	13 pounds
5 inches.....	12 pounds	17 pounds
6 inches.....	15 pounds	20 pounds

18. That all cast iron pipes and fittings shall be uncoated, sound, cylindrical and smooth, free from sand holes, cracks and other defects, and of uniform thickness, each length of soil pipe having cast upon it the maker's name or trademark, its diameter and its class or weight.

19. That all cast iron pipes and all wrought iron soil pipes shall be thoroughly coated inside and out with linseed oil at factory where made, after being cleaned. Pipes covered with coal tar or varnish are not to be used.

20. That the T's, Y's, bends and other fittings used on cast iron soil pipes, waste pipes and vent pipes shall correspond in weight, thickness and quality with the straight pipes.

21. That if wrought iron pipes be used for soil pipes they shall be designed and constructed as specified by the Durham System.

22. That standard wrought iron lap welded pipes with steam pipe fittings may be used for vent pipes, with the approval of the engineer, and in special cases, they may be used for waste pipes, in which case galvanized iron pipes will be preferred to plain black iron.

23. That for wrought iron waste pipes the fittings shall be extra heavy cast iron drainage fittings, recessed and threaded.

24. That lead waste pipes and lead vent pipes shall not weigh less per lineal foot than as follows:

1 inch diameter ... ...2 pounds
1¼ inch diameter .....2 1-3 pounds
1½ inch diameter .....2 2-3 pounds
2 inch diameter .....3½ pounds.

25. That the use of lead pipes shall be restricted to the short branches between the soil pipe or the waste pipe and the fixtures, bends, traps, flush pipe, etc.

26. That brass ferrules for four inch pipes shall weigh not less than 2½ pounds, for 3 inch pipe not less than 1¾ pounds, for two inch pipe not less than 1¼ pounds, the length of each ferrule to be not less than four inches.

27. That soldering nipples shall be of heavy cast brass or brass pipe of the following weights:

For four inch pipe, 3½ pounds; three inch, 2 pounds; two inch, 14 ounces; 1½ inch, 8 ounces.

Soil and Waste Pipes.

28. That each building shall have its own soil pipe or drain pipe until it shall have passed outside the walls of the building, except in special cases,

when the engineer shall prescribe the method of draining.

29. That no soil pipe, waste pipe or vent pipe shall be used within the walls of any building or for a distance of 3 ft. outside the foundation walls, other than wrought iron pipes with screw joints, cast iron pipes with securely leaded joints, or lead pipes with wiped or soldered joints. Tin pipes, sheet iron pipes, galvanized sheet iron pipes, earthenware pipes, tile pipes and wooden pipes are not to be used within a building for soil pipes, waste pipes or vent pipes.

30. That the main pipe from the sewer connection to the top end shall not be less than 4 in. in internal diameter at every joint, except in case of one kitchen sink, when a 2 in. soil pipe will be permitted within the building.

31. That each soil pipe and cellar drain shall be so placed as to be always readily inspected without excavation or opening walls or floors, and the plumber shall be responsible for the connection of his work with the house sewer connection.

32. That where a soil pipe passes through a cellar or basement it shall be properly supported by masonry piers or by brackets along the side walls, or by stirrups from the floor beams above, but if it be absolutely necessary to carry it beneath the floor of the basement or cellar, it shall be placed in an open trench or box until after inspection by the Engineer, who will decide whether it shall be filled in or not and in what manner.

33. That no trap or other obstruction to a free flow of air through the whole course of the house sewer and soil pipe shall be placed on the soil pipe or house sewer.

34. That in the basement or cellar the soil pipe shall in all cases be extra heavy cast iron, but above the highest fixtures the soil pipe may be of medium weight, and between the ground floor and the highest fixture it shall be of such weight as the engineer may require.

35. That each soil pipe shall be provided with one or more cleaning-out screws, or one air-tight lamp-hole in the cellar or basement, for inspection and cleaning-out purposes, to be placed where the engineer may direct.

36. That every vertical soil pipe shall be extended at least two feet above the roof of the building and above any window within a distance of 15 feet, and the end of the pipe left open or with a wire basket end without return bend, hood or curve.

37. That above the basement the soil pipes, waste pipes and vent pipes shal be securely supported from the side walls, floors and partitions by wrought iron stirrups and fastenings in such a manner as will prevent breakage of joints or pipes by unequal settlements.

38. That every soil pipe and waste pipe shall be given an inclination of not less than one-half inch to the foot in the horizontal part of the pipe, if such be possible, but in no case shall the fall be less than one-quarter inch to the foot, which fall shall be towards the outlet.

39. That the waste pipes from fixtures shall be of the following sizes: For water closets, 4 inches; slop sinks and hoppers, 3 inches; laundry tubs, 1½ to 2 inches; urinals, 1½ to 2 inches; bath tubs, 1½ to 2 inches; kitchen sinks, 1½ to 2 inches; wash basins, 1¼ inches in diameter.

Traps and Vents.

40. That every water closet, urinal, basin, sink, wash tray, bath tub and laundry tub shall be separately and effectually trapped as near the fixture as possible and never more than one foot therefrom.

41. That no fixture shall drain through more than one trap and no trap shall be placed at the foot of a vertical soil or waste pipe.

42. That water sealing traps of any pattern approved of by the engineer shall be used when separate air pipe connections or pipe vents are provided continuous with the descending arm of the trap.

43. That all traps except water closet traps shall be provided with heavy clean-out screws of brass at their lowest points, each screw to have not less than six threads, such cleanouts to be of the full size of the trap up to four inches in diameter and not less than four inches for larger traps.

44. That waste pipes from baths and basins will not be allowed to connect to water closet bends or traps, and each shall have a separate fitting on the soil pipe to receive the same.

45. That every trap shall be vented either by continuing the waste pipe as a soil pipe through the roof, or by a special vent pipe connected with the crown of each trap and extending to a connection with the soil pipe above the inlet from the highest fixture on it.

46. That the vents may be combined by branching together those that serve several traps, in which case the diameter of the vent pipe shall be increased proportionately.

47. That all vent pipes shall have a continuous slope, to avoid collecting water by condensation.

48. That if a vent pipe extends through the roof it shall not be less than three inches in diameter, from a point three feet below the roof to the upper end, and the rules for soil pipe terminus as heretofore prescribed shall govern.

49. That vents from water closet traps, except syphon closets, shall be two inches in diameter for a length of 20 feet, and for a greater length three inches in diameter, but closet vents into which other vents are connected shall be three inches in diameter.

50. That the vent pipes to traps of all fixtures, except water closets, may be ¼ inch less in diameter than the trap to be vented, but no vent shall be less than 1¼ inches in diameter in any case, and if less than 15 feet in length the diameter shall not be less than 1½ inches, in which case traps that cannot be unsealed and such as are approved of by the engineer shall be used.

51. That in certain cases, where fixtures are not distant more than 3 feet from a soil pipe, that is not less than 1 inches in diameter, and if there be no danger from syphonage, vent pipes may be omitted, with the permission of the engineer.

52. That approved automatic vents may be substituted when necessary or advisable, on special permit from the engineer.

53. That in constructing plumbing in old buildings, or reconstructing old plumbing, separate pipe connections or vents may be omitted when traps that cannot be unsealed and such as are approved by the engineer are used.

54. That no trap or vent pipe shall be used as a waste pipe or soil pipe, and no brick, sheet metal or earthenware pipe or chimney flue shall be used as a sewer ventilator, or to ventilate any trap, drain, soil or waste pipe.

55. That all water closets, slop sinks and urinals shall be provided with ventilation through walls or ceiling to the outer air to meet with approval of the engineer.

55a. Each outside drain shall be provided with a proper clean-out on the drain side of the connection to the soil pipe. This clean-out shall consist of a Y-branch so that a rod may be forced down in the outside drain to the main sewer. It is understood that this opening must be sealed so as to be gas and water tight.

Water Closets.

56. That all water closets shall be of porcelain and supplied with a sufficient quantity of water to keep them at all times clean and well flushed, from a tank from which water is not drawn for any other purpose. Direct service of a water closet is not permitted.

57. That urinals shall of porcelain and of some pattern approved of by the engineer, flush by tanks discharged automatically by syphon, or similarly to a water closet.

58. That the walls and floors where urinals are placed shall be of marble, slate or other non-absorbent materials.

59. That the overflow pipe from the flush tank (if any) shall not be directly connected with the soil pipe of any fixture.

60. That if a seat ventilating pipe for water closet be used, it shall be carried to the outside air and shall not be connected with the soil pipe.

61. That rooms in which water closets or urinals are placed shall be well lighted and shall be ventilated into the cock loft, or into the external air in a manner approved of by the engineer.

62. That the size of ventilating shaft shall be 30 sq. inches for each 10 feet in length of shaft for each water closet or urinal.

63. That water closets or urinals will not be permitted in cellars or basements, without special means of lighting and ventilating being provided and approved of by the engineer.

64. That pan closets, valve closets and plunger closets are strictly prohibited.

65. That no closet or other convenience which allows the escape into the house of air or gas which has been confined in any part of it, or from the drain or soil pipe, or which allows the accumulation of filth in or about it shall be fitted up and used.

Wash Basins, Etc.

66. That bath tubs, sinks, wash basins, wash trays, laundry tubs, etc., shall be of non-absorbent material.

67. That the exit pipes from all fixtures except water closets shall be furnished with suitable permanently attached strainers.

68. That the waste pipe from any fixture shall not be connected with the trap of a water closet or any other fixture.

69. That overflow pipes from fixtures shall in all cases be connected on the inlet side of the trap.

Grease Traps.

70. That grease traps of sufficient size shall be placed on the waste or soil pipes from sinks, wash basins, baths and laundry tubs, in hotels, restaurants, laundries and such other places as the engineer may direct. These grease traps shall be frequently cleaned by the owner or tenant and they shall be accessible at all times to the Sanitary Inspector.

71. That grease traps from large hotels, restaurants, laundries and such other places as engineer may direct, shall in each case be placed in a manhole outside the building.

72. That the liquid waste from manufacturing establishments shall be so clarified or filtered in suitable tanks on the premises of the owners, that all substances injurious to the sewers or that will tend to cause stoppages in the sewers, or that will produce a nuisance, will be completely removed before discharging such wastes into the sewer system, such sedimentation tanks and filter tanks being so arranged that they can be readily examined at all times by the engineer.

72a. Livery stables and barns with floors for cleaning vehicles shall be provided with sand boxes of approved pattern, and same must be kept in efficient working order.

72b. It shall be unlawful to deposit or cause or permit to be deposited into any vessel or receptacle connected with a public sewer any rags, cotton, cinders, garbage, hair, ashes, fruit or vegetables, peelings or kitchen refuse of any kind.

Sundry Fixtures.

73. That hoppers of approved design and location for the discharge of household and other liquid refuse will be permitted in yards, carriage houses, factories, etc., the outlet to the hopper to be through an iron grating permanently secured to or over the cast iron outlet pipe, which shall not be less than three inches in diameter.

74. That the iron outlet pipe from hopper shall be vertical from the grating to an iron trap of the same diameter as the outlet pipe, so arranged that it cannot be frozen.

75. That the horizontal sewer leading from the trap shall be of iron glazed sewer pipe four in. or six in. in diameter, as the engineer may direct.

76. That the drain pipe from a refrigerator or other receptacle where provisions are stowed shall not be connected with any waste pipe, soil pipe or sewer, but shall discharge openly into a sink or other fixture.

77. That each "safe" under a water closet, bath, urinal, wash basin, sink or other fixture shall be drained by a special pipe not directly connected with any waste pipe, soil pipe or sewer, but discharging into some place in open sight.

78. That drains, drips and overflows from steam boilers, range boilers, heating furnaces, cisterns, tanks, etc., shall not be directly connected with any waste pipe, soil pipe or sewer connection, but shall discharge openly into a sink or other fixture.

Connections.

79. That every connection with lead and iron pipes shall be made with brass thimbles or ferrules, having properly wiped joints, the ferrules being properly gasketed, leaded and caulked into said pipe.

80. That lead pipes shall have properly wiped joints, and brass ferrules shall be connected with lead pipes by wiped joints.

81. That where the trap to a water closet is above the floor the connection of same with the soil pipe shall be made by bolting a closet flange to a heavy cast brass floor plate soldered to the lead soil pipe, the joint to be made gas and water tight by means of red lead or white lead, this brass flange to be not less than three-sixteenths of an inch thick.

82. That no inverted joints will be allowed below any fixture.

Carpenter Work.

83. That no woodwork shall be placed at the front or sides of a water closet bowl, wash basin or bath tub.

84. That water closet lids shall be properly cushioned to prevent injury to the bowls.

85. That where either vertical or horizontal pipes are enclosed small doors shall be so placed that all parts may be accessible at all times without the use of tools of any description.

86. That traps, bends, elbows, connections, etc., shall not be placed beneath floors without the consent of the engineen, but if it be necessary to so place them and said consent be obtained, then trap doors (not screwed down) shall be provided so that all such traps, bends, elbows, connections, etc., may be readily examined at any time.

Cellar and Subsoil Drainage.

87. That each cellar or basement, except where the engineer considers it unnecessary, shall be drained into a pit, within the cellar or basement, not less than 12 inches deep below the floor and about two feet square, which pit should be of masonry laid in cement, into which pit all subsoil drains around and within the building shall discharge.

88. That the water collected in the pit shall be discharged into the soil pipe, or house sewer, through a deep trap of cast iron or of lead, so arranged that the water seal may be renewed, in which case the top of the soil pipe or house sewer shall be at a lower elevation than the bottom of the cellar drain pipe, or it shall be discharged through a trapped inlet into an independent drain, leading to the street sewer, in which case the top of the soil pipe shall be at least 15 inches below the lowest part of the cellar or basement to be drained.

89. That the pit shall be provided with a proper cover or grating to prevent the entrance of floating matters, debris, vegetables, sweepings, sand, mud, etc., and such precautions shall be taken as the engineer may direct to prevent the inlet to trap becoming blocked or closed.

90. That proper check valves or mechanical back water traps shall be placed on all cellar drains in addition to the water seal trap where there is any possible danger of flooding from the sewer or from the rain water leaders.

It is recommended that they be placed on all drains where the bottom of the cellar or basement is less than three feet above the top of the street sewer.

91. That, in general, the roof water shall not be discharged into the sanitary sewers, but into the storm sewers, or into the gutter, through a sewer or pipe independent of the soil pipe or house sewer.

92. That on business streets in special cases the roof water may, with the permission of the engineer, be discharged into the sanitary sewer through the house sewer, but in such cases each vertical rain leader shall terminate at its base in a cast iron trap, or the several leaders may be combined into one discharge pipe, and one cast iron trap (with clean-out) placed on it near its connection with the soil pipe or house sewer.

93. That all rain water leaders within the building shall be of heavy cast iron.

94. That the vertical rain water leaders outside the building from a point not less than five feet above the ground to the trap below shall also be of heavy cast iron, and all joints shall be leaded and caulked.

95. That no rain water leader shall be used as a soil pipe, waste pipe or vent pipe, and no soil pipe, waste pipe or vent pipe shall be used as a rain water leader.

Connecting Old Work.

96. That if application be made, as provided by by-law No. five (5), for a house sewer connection from a building or premises in which the plumbing work was completed before this by-law came into force, the engineer shall inspect the plumbing work, and if the work be found to be in accordance with this by-law a permit for sewer connection will be granted as in new work.

97. That if, however, the plumbing work be not in accordance with this by-law, such alteration shall be made as the engineer may direct, to make the plumbing safe to the persons residing in the building, and such as to be no source of injury or stoppage to the sewer.

98. That in all cases the woodwork shall be permanently removed from the front of all water closets, wash bowls and sinks; the soil pipe shall pass through and above the roof and fixtures shall be effectively trapped, the fixtures and pipes shall be clean, the waste and soil pipes shall have sufficient fall, and the cellar shall be properly trapped if it be connected with the house sewer.

99. That the plumbing system, after it has been exposed and the necessary changes made, shall be tested by applying the peppermint test or the smoke test, under which test there shall be no leakage or defect, which test shall be made by the owner or the plumber acting for or employed by the owner, in presence of the engineer, and shall be repeated if so required.

100. That the engineer, or the medical health officer, or the waterworks superintendent, or any authorized officer of the city council or the local board of health, shall be permitted to examine all plumbing pipes and fixtures at reasonable hours.

101. That if it be difficult or impossible to properly examine all fixtures and pipes in any building, the owner or the agent shall make such pipes and fixtures easily accessible, if so directed by the engineer, the same as in new work, within five days after notice has been given him to do so, and he shall so leave them that they may be examined at any time thereafter, without the use of any tool whatsoever.

102. That if a water closet compartment, urinal, slop sink or other fixture be found in a filthy or unclean condition, the tenant or owner will be notified of the fact, and if again found in an insanitary condition the tenant or owner will be proceeded against for creating a nuisance.

103. That for waterworks pressure no lead pipe shall weigh less than the following: $\frac{3}{8}$ inch internal diameter, 4 lbs.; $\frac{1}{2}$ inch, 6 lbs.; $\frac{5}{8}$ inch, 8 lbs.; $\frac{3}{4}$ inch, 10 lbs.; 1 inch, 13 pounds per lineal yard.

104. That iron pipes shall be galvanized and shall be submitted to and withstand a hydraulic pressure of 200 pounds to the square inch.

105. That the fittings for galvanized pipes shall correspond with the piping and shall be galvanized.

106. That each water supply pipe shall be laid with due regard to danger from freezing and shall be properly laid and graded with a fall to a stop and waste cock placed in the cellar or other convenient point, where the water can be entirely drained off from the inside of the building.

107. That all water supply pipes in the ground shall be laid to a depth of not less than eight and one-half feet, and when passing through or within two feet of a vault, or area opening, it shall be encased in a wooden box or otherwise protected from frost if considered necessary by the engineer.

108. That each water consumer in a tenement building shall be supplied with a separate stop and waste cock on the service pipe inside the building, unless water supply be metered.

109. That no arrangement shall be made for supplying water closets or urinals, except by self-closing cocks, unless when the water is supplied by meter.

110. That no arrangement shall be made for cleaning water closets or privy vaults by waste pipes from wash basins, baths or sinks, or other improper means, but each water closet shall be fitted up with a proper flushing tank.

111. That this by-law shall take effect from and after the date of the passing thereof.

112. That any person committing a breach of any provision of this by-law shall be liable, on summary conviction, to a fine not exceeding $25, exclusive of costs, or to imprisonment in the lock-up house of the municipality, or in the nearest gaol, for a period not exceeding fifteen days, in case of non-payment of the fine and costs inflicted for any such breach, unless such fine and costs, including the costs of committal, are sooner paid.

ROUGH ON MONTREAL.

J. E. Dore, city sanitary engineer, Montreal, has issued a report on the sanitation and heating of No. 5 Police Station in that city. The following are a few extracts from his report:—

"At the time of my visit, the cellar was very damp. I found that the surface water was infiltrating through the foundation wall and was flowing on the cement floor of the cellar. All the iron pipes in the cellar are rusted. In the passage, near the foot of the stairs, I found a gully, 2x3, 5 ft. deep, filled with the sewage from the station, to a height of three feet. The drain flows into this gully, above the water level. This gully is a nusiance.

"I found various defects in the plumbing, such as defective joints, water closets out of order. In the men's lavatory, the basin is not well fitted to the marble plates covering the wall. The W. C.'s are often obstructed because they are not provided with toilet paper.

"The heating is done by steam, at low pressure, by means of two furnaces, of a capacity of 7,650 feet of one inch pipe, or 15,300 feet of pipe in all. As there is only 4,845 feet of pipe in the station, these furnaces have a much larger grate surface than is required and therefore burn too much coal. The station is not well heated; the percentage of heat is too small and the system in certain cases is not fitted up as it should be. The air pipe of the radiators is not in the proper place. At the time of my visit, there was a good fire in the furnace; a certain proportion of the radiators was, however, tepid, while the lower half was decidedly cold."

TALES OF THE TRADE

A HARE HUNT.

On Saturday, Oct. 30th Tom Rich, of Noble & Rich, London, and James Glenister, London, representative of the Dominion Radiator Co., went on a hunting trip to Corbetton, with T. C. Dryden, Riverview. Later the party was enlarged by Mr. Barron of the Salada Tea Co., Toronto, and A. E. Williard, Galt. Not caring to lose any of the precious time the party repaired to the tall timbers (not the parlor) and began the hare search. Keeping up the hunt for several days with the success shown in the accompanying photo. Tommy Rich was the joker of the party and Jimmy Glennister was nicknamed General Buller, on account of his services in the Boer War. One of the party was boasting of having winged 133 birds on a former hunting trip, but Tommy said he had 'em beat as he had commenced hanging hares on the telegraph wires and when his ammunition was gone he had to walk back two miles to get to where he had commenced. Tom can tell 'em, all right, but when it comes to having a rabbit look him in the face and smile, Tom can't shoot worth sour apples. He missed three times and the rabbit had to scamper sadly away.

"Tommy" Rich and "Jimmy" Glennister, of London, on a recent "hare-raising" expedition.

A good one on Glennister happened one day. On his way home he was accosted by a friend who said:

"Hello, Jim, been shooting?"

"Yes," said Jim.

"What did you shoot?"

"Dog."

"Yer dog. Why, was he mad?"

"Well, he didn't look any too pleased," said Jim.

LOST HIS SUIT CASE.

L. L. Anthes, of the Toronto Foundry Co., has returned from a trip to Calgary and Edmonton during which he was a member of two hunting parties. While in Winnipeg he, along with Alex and Garnet Irvine, of the Standard Plumbing Co., and Sam Tait, manager of the plumbing department of the J. H. Ashdown Co., made up a duck shooting party, which visited Findlay, Man., Bob Green, master plumber, of Winnipeg, also being along. He later on went after big game south of Port Arthur, getting a deer, and Alex Cameron, Fort William, a moose. H. Anderson, Port Arthur, also got a shot at a moose, but failed to bring him down. The best Ed. Higginbotham, of Fort William, could get was a snapshot.

While at Calgary "Lawrie" was initiated into the society, which has recently gained many members in the west, "The Native Sons," the password to whose meetings is the "Indian Sign." Several members of the society came down to the depot to see "Lawrie" off on his trip east, and while waiting for the train, some one suggested that they have a cigar, so the party went across the road. On the return trip, however, Anthes and his suit case got separated, but he took the train on condition that his friends would send the baggage along on the next train.

"The best laid plans" oft go astray, however, and though "Lawrie" telegraphed from Winnipeg, and went on his hunting trip at Port Arthur, that suit case hasn't arrived yet, and as contained his camera his friends have to take his word for it that he got "all the law allows" on his shooting expedition.

A Trio at St. Thomas.

DIXON IS NOT GUILTY.

Owing to a similarity of names, a report was recently circulated to the effect that E. B. Dixon, master plumber, St. Thomas, had taken unto himself a wife. George Ferguson, of Ingram & Davey, St. Thomas, forwarded the report to Plumber and Steamfitter, Toronto, for publication, but finding the report an error, George now apoligizes for even thinking that Enoch would be guilty of such an act. Enoch, he writes, is too busy with contract work to think of getting maried.

Ernie Laidlaw, of the Standard Sanitary Co., Toronto, caught Mr. Dixon off duty a few days ago, he having just been "across the road" with Geo. Allen, of the Taylor-Forbes Co. The young lady, be it distinctly understood, is "Miss," (not "Mrs.") Dixon.

SELLING AT COST.

"Billy" Linton, of the Standard Ideal Co., Toronto, who has a well earned reputation, both as a salesman and as a hunter, took his annual shooting trip this fall in the Sudbury district, "Billy" Grant, master plumber, Sudbury, and half a dozen others making up the party. After a couple of days hard luck they had to move camp, but got in right the second time, the party of eight coming near getting its quota of a couple each, and Mr. Linton getting a fine buck weighing over 200 pounds.

On the return trip a native of the north, who has never shot a deer, admired Linton's buck, and asked him if he would sell the carcass.

"Oh, yes," said Linton, "and as I'm not hunting for profit I'll sell it at cost."

"All right," replied the native, "how much will it be?"

"Well," reflected Linton, "the deer I shot cost me about $1 a pound, and you can have it at cost."

The native suddenly lost his appetite for venison, and said he wouldn't buy.

TOOK THEIR WIVES ALONG.

"Jack" Owston, sales manager of the James Robertson Co., Toronto, worked a new stunt on his hunting trip to Devil's Lake, Haliburton County, this year, he and Alf. Langdon, Minden, taking their wives along. The hunters were lucky enough to get one buck each. One picture, The Plumber and Steamfitter secured, shows the hunters in a canoe with their trophies, while the other shows "Jack" carying a heavy load, the same consisting of nearly 200 pound of venison. Some hunters, it is said, prefer

Owston has the Goods.

to carry heavy loads of other varieties of merchandise.

A building permit was granted to Dr. E. A. Hall, Vancouver, covering the erection of a three-storey private hospital. The estimated cost is $32,000.

Plans for a new wing to the Toronto isolation hospital have been forwarded to the Board of Control by Medical Health Officer Sheard. They provide for an addition three storeys high, with separate wards for scarlet fever and measles. The estimated cost is $80,000, and may run as high as $120,000.

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The Giving of a Present at Christmas Time Will Help to Create a Greater Interest in Your Business—A Trade Paper or Technical Book Suggested as a Suitable Gift.

By J. F. Brady.

That season of the year is close at hand when most people find a great pleasure in sending some token of esteem to their friends—and extolling the best wishes of the glorious Christmas time. We will find that these tokens are listed in almost every class of things imaginable depending upon the ideas and tastes of the giver, who in many cases fails to succeed in choosing just the right thing for the temperament of the respective parties. It is not my intention to go into any detail as to what things are given or present to you a varied list of givable things, although it is probable that just now such a list would be of interest to the readers of this paper. But it is my desire to place before you a very few arguments why the master plumber who can, should not fail to remember the employes in his shop after he has properly provided for his family's needs.

The man who works for you should not only be able to perform the average amount of routine work as it were in the eight or nine hours during which he is working for you, but he should be a man, or a boy, who can use his brains as well as his hands and make for you many extradollars by getting into the average working day more work than is now usually accomplished by the majority of journeymen. The old saying "If a man likes you he will do his best to push your interests, but if he does not, he will not," grows truer and truer every day.

It is therefore to your interest to be popular with your men in a dignified way, and one of the best ways to become popular with them is to try and advance their interests. When a man sees he is being helped along to a higher plane, it is very seldom that he will turn against you. Many may argue that if you educate your men, when they become proficient enough to conduct the plumbing business themselves, they will up and leave you and go out for the business alone, but you can then congratulate yourself on placing in competition a man who is well able to do work in a thorough business-like manner, and not in a way which will tend to be a detriment to the trade throughout that particular city.

Now that the gift-giving season is nearly here, this would be a splendid time to commence to better educate your men, and one of the best means at hand is right here before you—this paper, and any good magazine on the particular trade in which you are interested: a copy of any one of the many books and treatise on the subjects of plumbing, heating, ventilation, etc., etc., which can be secured through the office of The Plumber and Steamfitter.

Any one of these means will advance the knowledge of your men and while the one book or magazine will not give him all that he may want to know, yet it will be an incentive to interest him to look deeper into the matter and if you make the start with him, before many months have past you will find that this man, whom you have remembered on next Christmas Day with either a subscription to one of the leading trade publications or a book on the subject in which he is most particularly interested, has begun for himself to obtain either the other trade publications, or a small library. You know that the right sort of a man who has probably not had the best of encouragement or opportunity, when once started in the right direction will gradually help himself along.

You cannot argue against the fact that this man will eventually become a better mechanic and as long as he remains with you—and for the encouragement you have given him he will hesitate to leave your shop—he will work his utmost to serve your best interests, and this in turn will undoubtedly be to your advantage and be one of the biggest dividends on any investment which you could possibly make.

There has been so much said on the value of the trade press that there is little I could add to that already written, but you, who have been a reader of this or other papers, even though it has been for a very short time, know already that you could not well afford to be without it in your shop. It is actually a business asset, for you are kept posted from month to month on the trade happenings throughout the world, and also have placed at your disposal articles on the pertinent subjects to the trade, and following these from issue to issue is alone a method of self-instruction hard to equal.

Don't you therfore honestly think that the education of your men in this manner would be a good investment? Think it over.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

The Western Radiator Co., Portage la Prairie, have decided to take over the assets of the Portage Iron Works.

T. McAvity & Sons, St. John, N.B., will, it is understood, establish a branch brass goods and soil pipe foundry at Port Arthur.

Harry Chas. Taylor, of Taylor & Sons, plumbers and steamfitters, Brantford, was united in marriage a fortnight ago to Miss Blanche Piper.

The heating plant with which the new Winter Fair building at Guelph is to be heated has arrived, and the contractors in charge are busy instaling it.

The new waterworks conduit at Montreal, has been completed and was placed in commission on Nov. 23. It is able to provide 70,000,000 gallons daily.

The premises at present occupied by Hayward & Dods, plumbers, Victoria, have been sold, and they have bought a lot for their own use elsewhere in that city.

T. J. Johnston, manager of the lead department of the James Robertson Co., Toronto, has been seriously ill recently and an operation was performed on him on Nov. 29.

The new Adelphi block at Peterboro has been completed. The building is heated by steam, the system having been instaled by McGregor & Reid, who also did the plumbing.

The town of Perth, Ont., proposes to buy the waterworks plant of the Canadian Electric and Water Power Co. The proposition will likely be submitted to the ratepayers in January.

There have been 65 new connections to the Smith's Falls system of waterworks and sewage. The system has been greatly extended and will probably show a surplus of $6,000 for 1909.

Macgregor & Reid, Peterboro, at $2,500, have the contracts for heating, plumbing and tiling in the new public library there. The electric wiring went to F. R. J. MacPherson & Co. at $450.

In the new Jones Avenue public school at Toronto, Hall & Dollery at $5,000 will do the electric wiring; and the Johnston Temperature Reg. Co., will instal a $477 heat heat regulation system.

Samuel Sahler, Toronto, didn't think it necessary to have a city permit to put in the plumbing in his barber shop. He appeared in the Police Court and his neglect of the by-law cost him ten dollars.

Gas was turned on the mains a week ago at Ridgetown and the plumbers and gas-fitters there are busy connecting up. It is estimated that two hundred houses and stores are now using gas there.

Nevin McWilliams, chief clerk of the plumbing department of the J. H. Ashdown retail house, Winnipeg, was married on Wednesday, November 17. His friends and fellow employes made him a presentation.

The Waldon Heating Co., Winnipeg, have recently secured contracts to instal heating plants in the G.T.P. roundhouse, Winnipeg, the Calgary hospital, four schools in the west, and an apartment block in Lethbridge.

Howie & Feely's plumbing and heating contract has been recommended by the building committee of the Brantford school board for the work to be done in the collegiate institute there. Their tender amounts to $13,462.

Dr. J. K. McClelland, president of the Waldon Heating Company, Winnipeg, has gone to California for a pleasure trip through that state. He will return in January to continue his position as financial manager of the J. D. McArthur Construction Co.

It is announced that judgment will be rendered on Dec. 28, on the appeal made by the Standard Ideal Co., Port Hope, against the injunction awarded the Standard Sanitary Co., Pittsburg, restraining the former company from using the word "Standard" in connection with their ware.

The plumbing contract for the Logan Avenue public school at Toronto, was awarded to the Fred Armstrong Co., at $1,725. J. R. Seager got the heating and ventilating at $4,850; the Johnston Temperature Regulating Co., at $775, will instal the heat regulators; and Hall & Dollery will do the electric wiring at $3,800.

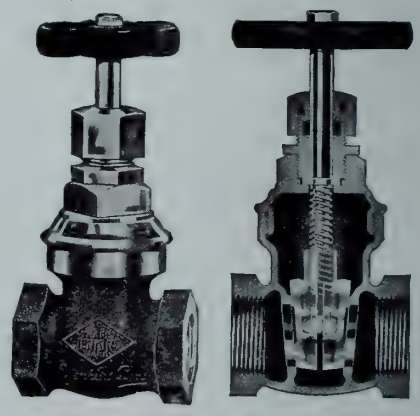
Gideon Hevenor, G. N. Hevenor, Miss Alice E. Hevenor, Mrs. A. E. Hevenor, of St. John, and B. F. Hevenor, of Toronto, are applying for incorporation at St. John as G. Hevenor, Limited, to take over and carry on the business of manufacturing and dealing in copper, brass, lead and iron in all its branches, now carried on by G. Hevenor. The application also sets forth that the firm shall carry on a wholesale and retail hardware business, plumbing supplies, roofing, electro and hand plating business. The capital stock is $24,000.

NEW JENKINS GATE VALVE.

Jenkins Bros., Montreal, have placed on the market two new type "K" gate valves designed on novel lines. As the illustrations show the body is globe-shaped, which, with the even distribution of the metal, insures great rigidity and strength—preventing distortion due to strain or shock. All parts are carefully machined to gauge.

In the construction of the discs are employed a combination of the solid-wedge, and the split-wedge principles, thereby producing a mechanism which adds to the ease of operation and closing. The discs are carried on a spindle-nut, so constructed as to act as a wedge at the point of closing, and, at the same time, allowing a certain amount of flexibility.

The valve body is provided with guides which prevent the discs from coming in contact with the seats until completely closed. Unlike the solid-wedge, the discs cannot jam in the valve body, for the first movement of the spindle loosens the discs, and the guides remove them from the seat faces.



New Jenkins Gate Valve.

To re-assemble the valve, place the two discs and spindle-nut together and drop them into the valve body. Then screw the spindle into the spindle-nut until the discs are lifted clear of the seats, when the bonnet may be screwed down tight.

The completion of the construction of the waterworks system, being installed by Yellowgrass, Sask., is in sight. The laying of the mains is finished. The machinery for the pumping station at the supply wells is expected every day. The central power station is completed and ready for operation. The laying of the supply pipe under the C.P.R. tracks is the principal work now to be done, and when that is finished the system will be ready for operation.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Public Buildings.

The Alberta Government will erect a provincial penitentiary near Calgary.

A public hospital will be built at Oshawa.

Alterations costing $60,000 will be made to Ottawa's city hall.

A C. N. R. and G. T. R. union station is proposed to be built at Cobourg.

The Morris vaudeville trust will spend $1,000,000 on new theatres in Canada.

A new $70,000 vaudeville theatre will be built at Ottawa by Buffalo interests.

A new post office building is promised to be built at Weyburn, Sask., next year.

St. Bartholomew's Anglican congregation, Toronto, propose erecting a new $25,000 edifice.

The Great Northern now propose to erect a larger station on their present Vancouver site.

The Railway Commission has ordered a union station to be built at Regina by the C.P.R., C.N.R. and G.T.P.

A permit has been issued to the Board of Education for a two-storey brick school on Gerrard Street, Toronto, to cost $55,000.

The Canadian Northern Railway will proceed at once with the erection of a temporary station office and freight shed at Ottawa, to cost about $5,000.

Appropriations of $4,000 and $15,000 have been granted the public works department for repairs in the Toronto customs house and the examining warehouse.

The congregation of St. Andrew's Roman Catholic Church, Port Arthur, have decided to adopt the plans of G. E. Tanquay, of Quebec, for a new cathedral that will cost from $85,000 to $100,000.

Negotiations are now in progress, which, if brought to a successful issue, will furnish Brandon with one of the most handsome and efficient opera houses in the west. The structure is to cost $60,000.

The new chemistry building given to the Kingston School of Mining, by the Ontario Government, will be erected by Michael Sullivan, whose tender of $60,000, was the lowest. Work will be started at once.

Plans for the reconstruction of the burned wing of the Toronto Parliament Buildings were submitted to Hon. Dr. Reaume, Minister of Public Works, by Mr. E. J. Lennox, the architect. The cost is estimated at $285,000.

Dovercourt Presbyterian church, Toronto, will erect a Sunday school hall on the lot at the rear of the present edifice, that will accommodate 1,000 scholars. The cost will be $80,000, and the work will be begun next spring.

A temporary station will be built by the B. C. E. R., so that the present depot may be razed, to make room for the magnificent new station which the company has planned to erect for its New Westminster terminus.

Municipal Undertakings.

The Victoria city council is calling for tenders for lead pipe and brass goods.

A number of water pipe extensions are to be made immediately at Halifax.

Contracts for electrical pumps for Toronto's waterworks were awarded recently.

The sewerage system in the newly annexed districts of Hamilton will cost about $125,000.

George B. Moork was awarded the contract for the Weston filtration basin, his figure being $2,675.

A new waterworks building will be erected at Hull, and some new machinery will be installed.

T. A. Murray, consulting sanitary engineer, Toronto, is to prepare plans for a water supply at Bowmanville.

A brick structure is being erected at the Lindsay pumphouse in which to place the ozone generating apparatus.

This year about three miles of large mains and several miles of smaller mains were laid at New Westminster.

Fourteen miles of water mains will be laid in Vancouver next year, according to the plans laid before the water committee.

All the pipes for the Port Arthur intake line have arrived, and the work of laying them will be pushed. The work on the filtering basin is also well under way.

The South Vancouver council has awarded the contract for the wood-piping in this mnuicipality to the Municipal Construction Co., of Vancouver, at $72,000. The piping is to be delivered next June.

Building Notes.

The Merchants Bank will erect a $11,000 branch at Toronto.

Grant McArthur will erect a $25,000 apartment house at Vancouver.

An addition, costing $20,000, will be built to Braemar Lodge, at Calgary.

The work of excavating for the new Halifax Y. M. C. A. has been begun.

Kingston Oddfellows contemplate the erection shortly of a temple for lodge purposes.

M. J. McLeod & Co., Moose Jaw, will have a large departmental store erected in the spring.

John Ternes has secured the contract to build the new Bank of Commerce at Watrous, Sask.

W. A. Cole will build 100 houses next summer and spring in the Bayswater district of Ottawa.

Smith, Davidson & Wright, wholesale stationers, Vancouver, will erect a ten-storey warehouse.

Principal McKechnie is building a residence near the site for the new Estevan, Sask., school house.

H. T. Knott, Victoria, B.C., has been granted a permit for the erection of a dwelling at a cost of $2,300.

D. J. O'Keefe, Chatham, Ont., has taken out a building permit to erect a two storey residence. Cost $3,500.

Plans have been prepared for the Toronto Musical Union with regard to the erection of a building on University Ave.

James Cronin, of Spokane, has brought a lot on Shaughnessy Heights, Vancouver, where he will build a fine residence.

Building permits were granted recently at Vancouver to: A. Munroe, $2,200; J. Coleman, two houses, $3,200; J. Metcalfe, $2,300; A. Svencski, $3,500.

A. Lacombe, Montreal, Que., has awarded the contract for the erection of an apartment house to M. Huberdeau, at $25,000.

The Order of Grey Nuns are preparing to erect headquarters at Winnipeg next year. Estimated expenditure, $300,000.

Plans have been drawn by Architect McElroy for the Y. W. C. A. building at Calgary, which will cost $45,000. The excavation work will be finished this fall and the construction work will be started next spring.

The complete building returns for St. Boniface to date have been compiled and show a season of great building activity. The figures comprise those of St. Boniface proper and Norwood, which is a part of Winnipeg over the river, and include many fine cottages and houses besides warehouses, factories, churches and schools. The statement gives permits for 187 structures valued at $210,000.

PLUMBING AND HEATING MARKETS

MONTREAL.

November 30.—Although in some lines business has slackened off, there is still a large amount of trade being done generally, and considering the time of the year supply houses are satisfied with the output. The open season being later this year encouraged a lot of rush work on houses. While the needs of the city and suburban places will necessitate building being continued through the winter. The demand, therefore, while it may show further signs of falling off, will probably be much better than that of the average winter.

Manufacturers in most cases are commencing to get the upper hand of their contracts, and securing a chance to look around again. Soil pipe is easier, but iron pipe is still hard to obtain. The rush on enamelware is as great as ever, many houses being now ready for their ware. This is the same in the heating lines. Brass goods seem to be in better demand, and the market has pulled together since the new discounts. All the way round prices are firm, and the tone generally is good.

Jobbing work is very active and plumbers are busy. Some good contracts are being held, and altogether the various shops are contented with the trade doing.

SOIL PIPE—The close of navigation and the easing up consequent on the arrival of winter have enabled manufacturers to catch up a little. This has been a wonderful season for soil pipe. We continue to quote: light 69, medium and extra heavy, 70 off.

LEAD PIPE—Good quantities of lead pipe are still going out, the firming of ingot lead creating a desire to stock up more. We quote: pipe and waste at 27½ off; traps and bends at 50; caulving lead, 5c per lb.

SOLDER—Jobbing work being good, solder has been in strong demand. There is little stocking up being done. The market is steady, and we quote: 19½c for half and half, and 18½c for wiping.

IRON PIPE—Although the demand has fallen off somewhat, delivery is still hard to obtain in some sizes. Cutting is noticed, but generally prices are: ¼-inch black, 63; galvanized, 48; ⅜ black, 59; galvanized, 44; ½ black, 69; galvanized, 59; ⅜ to 4-inch black, 71½; galvanized, 61½.

RADIATORS AND BOILERS—There is still a keen demand for heating goods, the recent open weather enabling rapid progress to be made on houses. The demand is likely to be maintained during the winter owing the many houses yet unfinished. The market is unchanged, and we quote: Steam boilers, 60 and 10; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 10; steam radiators, 50, 10 and 2½ per cent.

ENAMELWARE—No change in prices is reported. The demand keeps up and manufacturers are hard at work on old contracts. The tone of the market is good.

SCRAP METAL—No changes in prices are announced. There is still a scarcity of scrap steel. We quote:—Heavy copper and wire, lb., 11c; light copper bottoms, 10c; heavy red brass, 10c; heavy yellow brass 8c; light brass, 6½c; tea lead, 2¼c; heavy lead, 2¾c; scrap zinc, 3c; No. 1 wrought iron, $12; machinery cast scrap, No. 1, $14; stove plate, $12; malleable, $12; miscellaneous scrap steel, $7.

METAL—The demand keeps up well, and with the strong tone to tin and copper in the primary markets local prices have been marked up. We now quote: Ingot copper, 14c; ingot tin, 32½c; lead, $3.60.

TORONTO.

November 30.—The rush and press of trading is over for this season; at least so far as new business is concerned. There are sufficient orders on hand, however, to keep supply houses busy, especially in the line of enamelware, which is still decidedly brisk. Some articles in this class are yet scarce, particularly medium-sized baths. Hamilton and Toronto are taking great quantities just now, and the towns in the mining section of Northern Ontario are using up large numbers, too.

Travelers who came in last Saturday say the past week was a rather disappointing one, and quite a lot of prospective business will now stand over until the spring. Brass goods and heating lines are pretty good. Master plumbers in Toronto are busy, and there is no let up yet in the building situation.

Prices are much the same as formerly. Caulking lead is a trifle higher, and iron pipe is firm at the old quotations.

ENAMELWARE. — Medium - sized baths are in demand on a big scale in the larger cities of the province. Hamilton took nearly a boatload of all kinds of enamelware. principally sinks, last week. Cobalt and Halieybury, too, have made calls for these articles, as well as plumbing goods generally. Stocks coming in from the manufacturers are large, but one or two wantable lines are rather scarce. Prices are firm. The best grade of low-down combination, is selling for $16. Laundry tubs are going out fairly well.

BOILERS AND RADIATORS.—This one line shows a rush, not exactly in new business, but because of the two cold days last week, owners of new houses are pressing for the immediate instalation of heating systems on existing orders. Prices are unchanged. Hot water boilers and radiators are 50 and 10; steam radiators, 50, 10 and 2½; and wall radiators, 50 and 10.

BRASS GOODS. — Continued good business is going on, some of it of an anticipatory holiday nature. Electric and gas fixtures are selling well. Compression work is at 65 per cent. for standard, and 60 per cent. for high-grade. Fuller work is at 70 per cent.

IRON PIPE AND FITTINGS.—Trading is just fair at present, though the season was a splendid one. New orders show an appreciable drop since last issue, particularly outside Toronto. Prices hold strong, with the exception of an easier feeling in malleable fittings. 1-inch black is $4.70; and galvanized $6.35. Cast iron fittings are 65, and malleable 40.

LEAD PIPE.—This line is rather slow just now, very little going outside the city. The price is unchanged at 27½ per cent. off, which is also the discount on lead waste. Caulking lead is a ½c higher at 4¾c a pound. Traps and bends are 50 per cent.

SOIL PIPE.—Trading is being confined pretty much to orders already booked. The season, however, is not entirely over, as master plumbers say with building continuing all winter, there will be a steady, though hardly a big, business done until spring. Light pipe is 60 and fittings 70 per cent.

SOLDER.—Sales are fairly good, but calls are for small quantities. Wiping is around 18c to 18½c, and half-and-half 18½c to 19.

METALS.—Steady and fair business is being done. Copper is 14c to 14½c; pig lead $3.65 per hundred for imported and 10 cents less for domestic; tin, 32½c; spelter, foreign $6 per hundred and in sheets $6.75 to $7; U. S., $8 to $8.50.

OLD METALS.—Dealers are offering for copper 11c to 12c; brass, 6½c to 10½c; lead, 3c to 3¾c.

Goodwin & Co. have opened a plumbing and heating business at Sarnia.

McKelvey & Birch were awarded the contract for the plumbing, heating, ventilation, metal work and slating at Queen's University chemical building, Kingston, at $7,672. The Newman Electric Co. received the contract for the lighting and wiring at a cost of $1,195.50.

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MONTREAL PLUMBERS PROTEST.

Some sensation has been created in Montreal plumbing circles by the proposal to substitute, if so desired, the wipe joint as ordered by law by a patent joint called the Lafrance—the invention of a local man. As a protest against any change in the by-law enabling this new joint to be used, a delegation of master plumbers and journeymen, recently, attended a meeting of the Montreal Health Committee.

The principal speakers for the Master Plumbers were Chairman P. C. Ogilvie, J. Thibeault and J. Griffin, and for the Local Union of Journeymen, A. Burke and H. J. Clayton.

The delegation was unanimously opposed to the new joint, claiming that its usage would allow inexperienced men, who at present cannot wipe a joint, to use the Lafrance joint, which is, in itself, they claimed, not a perfect joint. This would pave the way for much defective plumbing and encourage unqualified men to take on work they could not do now.

Chairman Ogilvie said that they were not looking at the matter from the point of view of the plumber, but from that of the citizen. Were the latter going to get the same protection from the Lafrance joint as they did from the wipe joint? There was nothing better than the wipe joint, properly done and they should be very careful before allowing any substitute. If the Lafrance joint could stand the same tests as the wipe joint, well and good, but he did not think it could, and if not, then by allowing its use they were paving the way to a very serious state of affairs. In his opinion the Lafrance joint might be tight when fitted in, but it would not remain tight very long. The expansion and contraction of the waste pipe caused by the hot and cold water would soon cause the joint to leak. He asked the authorities not to make any change in law without a very careful consideration.

The Health Committee promised the delegation that they would give the Lafrance joint a thorough test, and subject it to every strain that a wipe joint would obtain in a new building, before they made any change in the by-law.

The Lafrance joint is a coupling nut or ring which is threaded to a cast-iron soil pipe fitting, the lead pipe being passed through the nut and then expanded and driven against the face of the cast iron fitting by screwing the nut onto the fitting. It is claimed that the pressure brought to bear on the lead pipe by the turning of the nut, cuts into the lead pipe and reduces its thickness. This would mean a cracking of the lead in time at the point of contact.

Toronto supply men enjoyed a dinner at the Albany Club on Friday, Nov. 26th.

Charles Childs, representing the Farwell Foundry Co., Berlin, in Toronto is on a trip to Cochrane, where his brother, Frank Child, recently broke his leg.

Condensed or "Want" Ads.

BOOKS FOR PLUMBERS.

PRACTICAL HINTS ON JOINT WIPING, for beginners in plumbing.—This book contains two original articles on joint wiping by experts, together with a selection of letters and articles on various important phases of the subject. 66 pages, 41 illustrations. Price 25c.

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MISCELLANEOUS.

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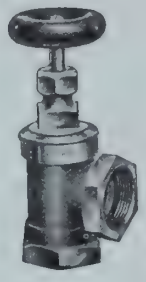

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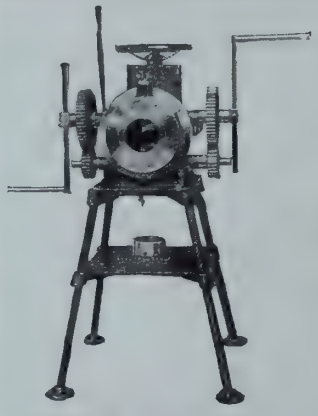

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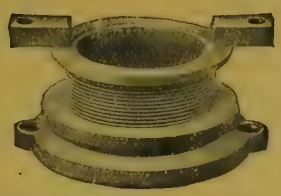

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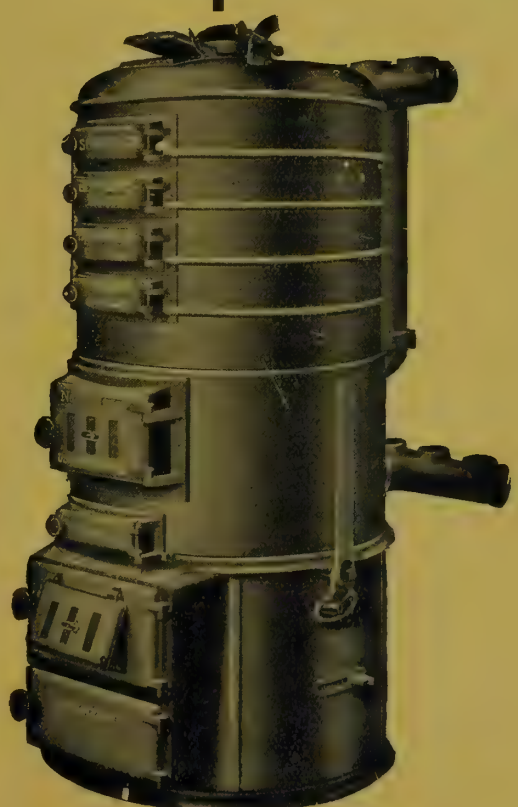

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Plate F
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Vol. III, No. 24 (New Series). Publication Office : TORONTO, DECEMBER 15, 1909. Old Series, Vol. XXI. No. 24

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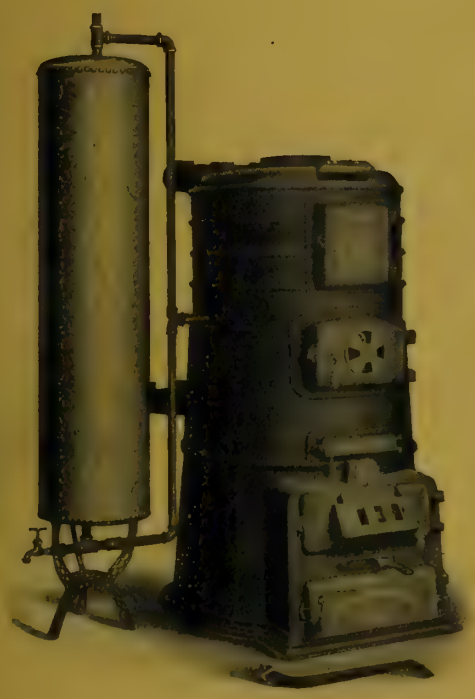

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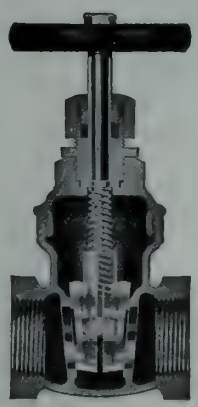

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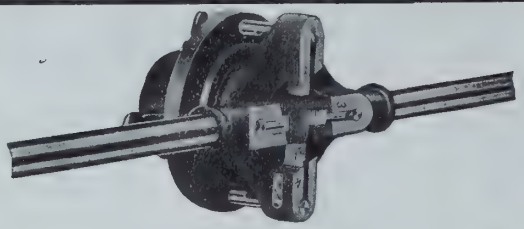

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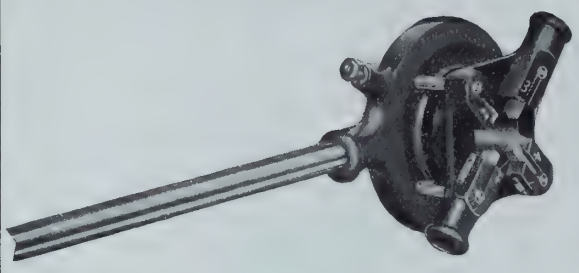

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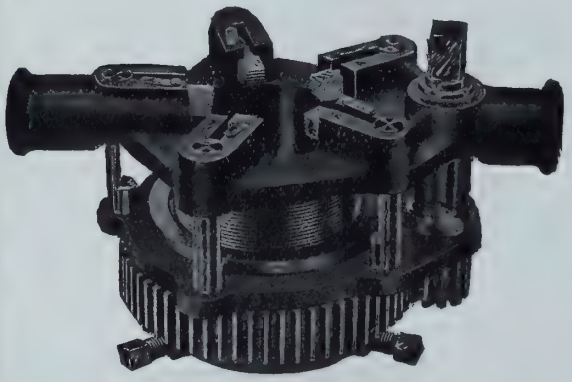

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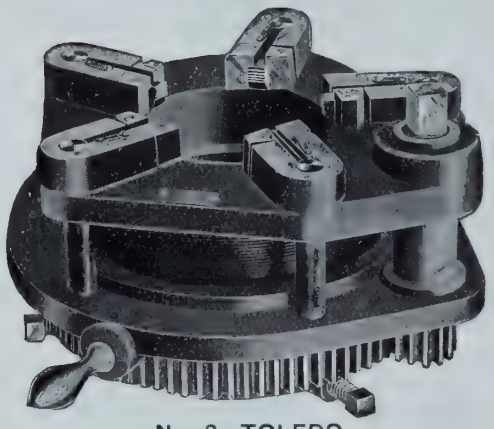

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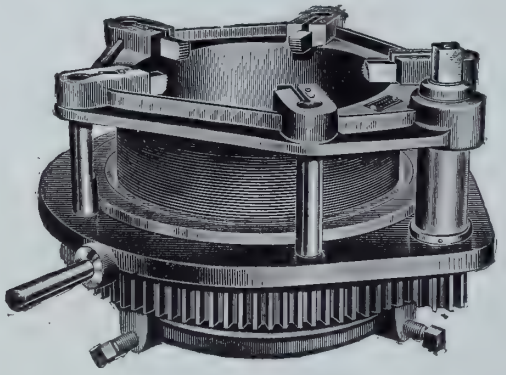

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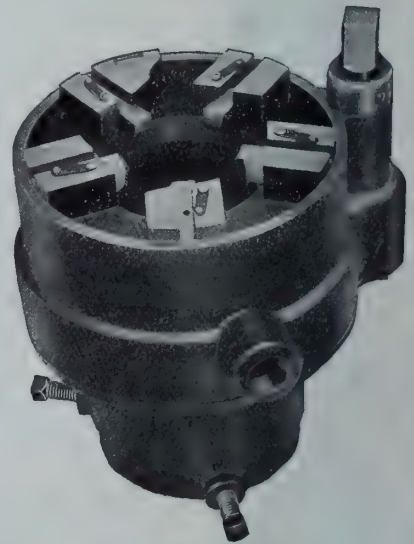

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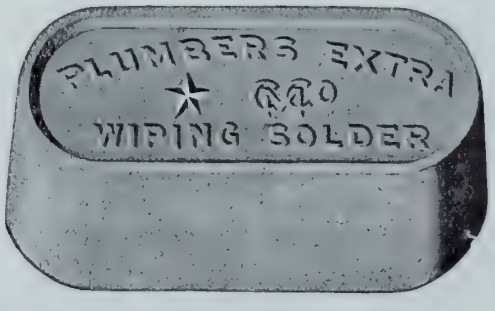

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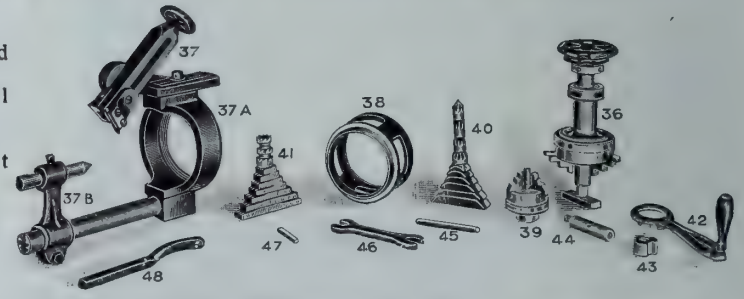

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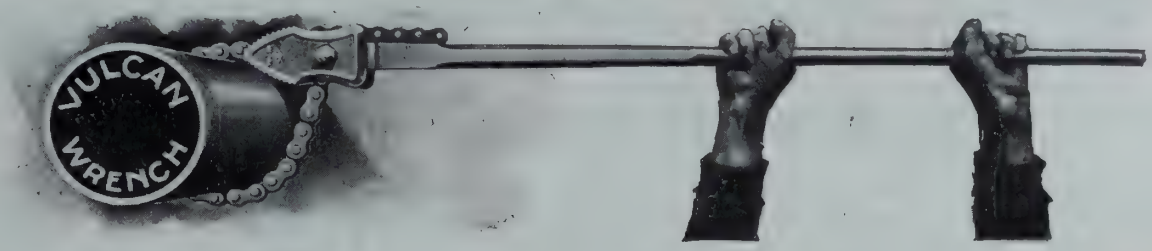

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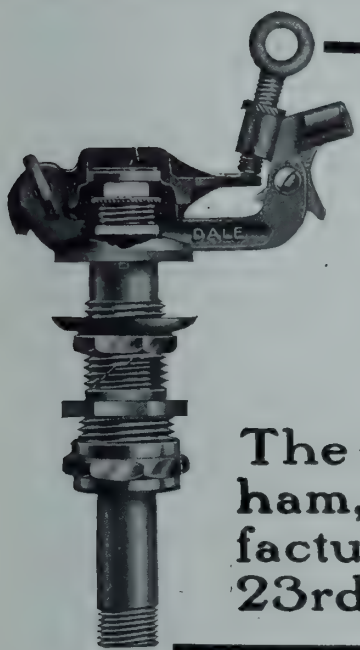

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Plumber and Steamfitter

and Sanitary Engineer of Canada

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Circulating amongst Plumbers, Steam, Hot Water and Gas Fitters, Sanitary Inspectors, Heating and Ventilating Engineers, City Engineers, Boards of Health, Architects, etc.

TORONTO, DECEMBER 15, 1909

THE PLUMBER, NOT THE POLICEMAN.

The Toronto Globe (Dec. 6) makes an evasive reply to the editorial in The Plumber and Steamfitter of Dec. 1. Although we then pointed out that we had not advocated a high license fee and, in fact, would favor the abolition of the license if bonds are required, the Globe continues to argue that the license is a tax and should be abolished. And the Globe repeats that all restrictions to doing plumbing work should be removed, the public being safeguarded by the employment of inspectors.

The Globe makes a lengthy argument regarding the law compelling departmental stores doing a drug business to form a chartered company with a qualified pharmacist in charge. "It is necessary," the Globe says, "to see that pharmacy, medicine, and surgery are in competent hands. Unlike plumbing and other mechanical trades, mistakes cannot be remedied, nor is there any temptation to enhance profits by making them intentionally. But any restriction that goes farther than the insuring of competence is useless, mischievous, costly, and inimical to the public interest." Then in the last few lines of its editorial, the Globe condemns examinations for master plumbers as absurd, bringing forth the "poor widow" argument that it would be unfair to compel the widow of a plumber to pass an examination or sell to someone mechanically competent.

In referring to plumbing as a "mechanical trade," the Globe fails to recognize that plumbing is everywhere being recognized as an important branch of modern sanitation, and plumbers are being given positions on Boards of Health along with medical men. Master Plumbers' Associations have committees investigating scientific subjects such as the dangers of sewer gas and their findings are being welcomed in the universities. And the intelligent men in the trade realize that their future work is as sanitary engineers in solving sewage and pure water problems in the rural districts as well as in improving the sanitation in the crowded slums of the larger cities.

The Globe hides the question of requiring examinations in its discussion of the less important matter of whether any person should be permitted to do plumbing, whether a license should be charged plumbing firms, or whether firms should furnish a bond to guarantee their good workmanship. The establishment of a system of examinations, however, is the real issue, and the Globe's quibble about the plumber's widow does not hide it. A druggist's widow cannot conduct a drug store without placing it in charge of a competent man and a plumber's widow should be in exactly the same position.

The argument presented by the Globe, that plumbing should be unrestricted and governed only by a staff of inspectors to do police duty, is tantamount to saying that no standard should be set for the engineers in charge of the heating and power plants in factories, educational and municipal institutions. Anyone, according to this point of view, should be allowed to run dangerous steam boilers, to operate elevators, to handle the throttle on railway trains, or do pilot or engineer duty on steamboats, providing, of course there is a staff of inspectors to watch them. But the tendency of the times is in the opposite direction and the governments throughout Canada and elsewhere are passing laws requiring a higher standard of efficiency from those who undertake to do work upon which human life depends. And in line with this movement is the growing recognition of the fact that prevention is at all times better than curing and that the health of the community rests upon the establishment of proper sanitary preventative measures. Winnipeg, for instance, after many serious epidemics of disease, passed a law compelling all property owners to instal modern plumbing systems in their houses. Sudbury did likewise, and within the past couple of months Kingston has followed suit and Moose Jaw is considering the matter. The action of the Ontario Government in sending commissioners to deal with the causes of the typhoid epidemic at Cobalt and other places in Northern Ontario, is further evidence in this direction.

But the Globe has itself given the best answer to its own individualistic argument. For some time that paper has been conducting an anti-gambling campaign, and a few months ago it objected to the Secretary of State at Ottawa issuing a charter to a club organized to hold race meets, claiming that gambling would be encouraged at the race track. Why did the Globe object? Would it not have been in line with its policy to have urged that no restriction be placed upon horse racing, the public being protected by the appointment of a staff of policemen to prevent gambling.

The Globe's "free trade in plumbing" idea is a nice subject upon which to theorize, but just as the industrial development of Canada made it necessary for the Liberal party to change from a free trade to a protectionist policy, so will it be necessary for the oppenents of examinations for plumbers to withdraw their opposition or continue their efforts to keep alive ideas which the onward march of civilization has made unworkable and obsolete.

Every branch of the plumbing trade will benefit by the raising of the standard of plumbing examinations. The public will also benefit materially in being ensured that only competent men will be engaged in installing the sanitary conveniences which are so important in the prevention of disease. The Globe poses as a defender of the public against a supposed monopoly, but it is really opposing an effort to establish a system in which the public will be protected against employing incompetent workmen. In defending the incompetent plumbers it is working against the best interests of those who have to pay for and suffer from the ill effects of bad plumbing work.

THE EVOLUTION OF PLUMBING.

Beginning with its issue of Jan. 1, The Plumber and Steamfitter will publish, in serial form, an instructive series of articles by Herbert F. Shade, Victoria, B.C., on the "Evolution and Simplification of Plumbing." This series was promised a year ago, but Mr. Shade's illness has prevented their earlier publication.

Mr. Shade is Plumbing Inspector at Victoria, and has won a reputation in all parts of Canada and the United States for enterprise and sanitary knowledge, papers prepared by him having been read at meetings of the American Society of Plumbing Inspectors, and republished in the leading sanitary journals.

The Plumber and Steamfitter is certain that Mr. Shade's articles will be read with interest by every master plumber in Canada. Mr. Shade has agreed to their publication in The Plumber and Steamfitter in order to assist in making this paper a credit to the Canadian trade, and if others are equally as zealous and patriotic as he, Canada's plumbing trade paper will soon reach the high standard set by older contemporaries in the United States. The Editor especially solicits the co-operation of readers in building up a strong "Questions and Answers" department. Send along the questions and we will discuss them.

OFFICIAL NEWS

N. A. M. P. & S. F. of CANADA

OFFICERS 1909-10

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Chairmen of Committees,—Legislation, H. A. Knox, Ottawa; Sanitary, P. C. Ogilvie, Montreal; Apprenticeship, J. Griffin, Montreal; Essay, E. Russell, London.

Next Convention will be held at Toronto the last week in August, 1910.

BEGIN THE NEW YEAR RIGHT.

Christmas is upon us and the new year will soon be here. Plumbing and heating work is less active, and during the next three or four months the master plumber and fitter will have some time to clean up his shop and do some planning for another year.

Stock must be taken and the year's books balanced up so that an idea can be obtained of what the gains and losses of the year have been. And outstanding accounts should be pressed for collection. Old stocks of lighting fixtures, etc., which are taking up space in the shop should be cleaned out and much of the accumulated scrap can also be disposed of.

Then thought must be given to next year's business. The trade paper should be studied for announcements of books on technical subjects which can be read to advantage during the coming winter. Articles on keeping the books and running the business should be read and filed for future reference.

What about trade organization? If the firm has not been connected with the Master Plumbers' Association in the past would it not be well to begin the year by sending an application for membership to the National Secretary or Provincial Vice-president? An effort is being made to re-organize the trade during 1910 as a Sanitary and Heating Engineers' Society, and with every probability of success.

Adopt these New Year suggestions and you will be doing something towards putting the trade on a better basis and something which will benefit yourself and your business.

COMPULSORY PLUMBING CONNECTIONS.

A by-law is now before the Moose Jaw city council, the purpose of which is to provide for compulsory house connections to the sewer and water system. Briefly stated the by-law empowers the council to give thirty days notice to owners of houses heretofore erected or of houses hereafter erected, on streets served with the city sewer and water system, to make connections therewith and to install a sink and closet. If the owner fails to make the connections then the city is empowered to close the house and make the connections and charge the cost thereof against the property, collecting the same over a period of ten years in the same manner as taxes are collected, the interest rate being 7 per cent. Under this plan it is calculated that the cost to the ratepayer for making a compulsory connection would be about $21 annually for the ten year payment. The matter of financing the proposition by special local improvement debentures is yet to be worked out, but full power is given the council by the City Act in this respect.

The by-law is one calculated to promote the best interests of the city at large by working a much needed improvement in the sanitary conditions. Moose Jaw today is not receiving the benefit it ought to receive from the thousands of dollars that have been invested in the sewer and water systems. The health of the city is daily jeopardized by reason of the filth spots caused by landlords who refuse to go to the expense of making connections for their tenants, and in some considerable number of cases for themselves. From the standpoint of civic hygiene what profit is there to the city for one ratepayer to go to the expense of several hundred dollars for modern improvements, if his fellow ratepayers all around him are to be allowed to continue antiquated methods? Or what profit is it to the city to spend hundreds of thousands of dollars to perfect a modern system if only a portion of the ratepayers on the streets served by the system used it? The only practical method is to absolutely abolish the dry earth closet and slop barrel on every street where the sewer and water mains are laid. Compulsory connections will in time bring this about.

The crux of the matter is that in the congested part of the city, there are fever beds and filth spots that are a disgrace to any community, that must be done away with in the interests of the general heath, and the city council would be fully justified in adopting measures to remedy this, even if the outlying portions of the city were inconvenienced for the time being.—Moose Jaw Times.

Why so Many Plumbers Fail in Business

A Correspondent in the Metal Worker Discusses the Sin of Undercharging and Suggests Some Questions, which Should be Considered by the Journeyman Who is Thinking of Going Into Business for Himself—Lessons Learned Through Mistakes Made.

Consider the man prepared to make the step from the ranks of the employed to those of the employers in such lines as plumbing and tinning. At the outset he would do well to determine beyond a doubt whether or not he is an efficient workman. Let him set aside his own opinion on the subject and get the honest opinion of others. He can do this by taking note of the number of times he has been praised or complimented by a customer or by his employer. Or has he friends among the customers—one who requests of the boss that John Blank be sent to do the work. Let him gauge his ability by taking note of the order in which the boss lays off the men as a slack season approaches. Don't temporize by saying that the boss lays you off before he turns down Joe Ace and Tim Tray, and neither one as good a man as you. The boss knows.

We are assuming the candidate is a good mechanic. Granting his mechanical ability, has he those elements of character which go to make for success? Promptness, reliability, a pleasant manner coupled with firmness, are desirable qualities, for he will find that instead of working for his old boss—with whose peculiarities he is familiar—he will now work for many bosses, with an infinite variety of peculiarities in combination. Can he keep his temper?

Study Present and Fututre Income.

Can he step from one success to another, and without impairing his savings, which we will suppose are drawing 3 per cent. interest in the savings bank. For the sake of using figures we will assume his wages to have been $3.50 per day, with steady employment. This figures out $21 per week, and for 50 weeks, allowing two weeks for vacation, $1050.

From the fact that he contemplates embarking in business, we know that he has a surplus of money, or savings, and will therefore further assume that he saves on an average $250 per year and that actual living expenses are $800 per year. Therefore, in the first year of his embarking in business he must make $800, besides his business expenses and interest on money invested, or cut into his own or some one else's reserve capital.

His running expenses, counting $240 for rent, $25 for light, $33 for heat, $90 for cartage, $10 for plumbing license and $300 for bookkeeping and collecting, foot up to $700, and is only approximate, and for the sake of analyzing the probable results. Whether cartage is paid out of pocket directly or for the keeping and caring for a horse, the expense is about the same. So, too, whether he pays for his book work or takes time from his own productive labor, the keeping of accounts costs money, and the failure to keep them costs much more; $300 is not a high estimate for that work.

What Invested Capital Must Earn.

We will further assume that so small a capital as $1,500 shall be invested, and that the amount of business placed on the books for the year will be about $5,000, and that the uncollectable accounts will run about $150. The total earnings necessary to keep up the usual average of savings made while working under wages would then be as given in the table.

Table of Necessary Earnings.

$1,050.00	representing wages.
700.00	representing expenses.
150.00	representing lost accounts.
15.00	representing interest on $1,500.00 at 3 p.c.
250.00	representing usual savings.
$2,195.00	representing earnings of self and capital.

Realizing that each hour's work now yields to him personally a larger return than when working under wages, we must remember that a goodly portion of his time must now be used in making estimates, talking to prospective customers, in pressing delinquent debtors and in other unproductive but hard work. This serves to keep his actual earning power per day down to, or a little below, what it was when working under wages. His capital of $1500 must therefore earn the remainder of the $2,195, or $1,145. This is equivalent to 76 3-10 per cent. on the investment and about 23 per cent. on the gross amount of business shown on the books for the year.

What Careful Bookkeeping Shows.

As the amount of business placed on the books include the charges for labor performed by the man himself, we will for our present purpose say that the credit side of the loss and gain account should show the above mentioned balance of $2,195 at the end of the year, and that the actual cost of material and labor should be the difference between that figure and the $5,000 book business, or $3,805. Add to this a suppositious inventory of $1000 worth of goods remaining on hand at the close of the business year, and note the merchandise and loss and gain accounts as shown on the following page.

To find the real comparison between this first year in business and the former year, when working for wages, we must deduct from this profit the $1,050 he would have received in wages and $45 which he would have received from the bank as interest at 3 per cent. on his savings deposit of $1,500, now invested in the business. This would leave him a book balance of $250. This amount, with the $1,000 stock on hand, would be the capital invested for the coming year, unless added to from some other source. It will be borne in mind that this figuring takes no account of personal expenses to which the new business man has been subjected. Such items taken from the cash account should be charged to the proprietor the same as though he were a customer, so that when the books are finally closed for the year the debit side of his account will show his personal expenses for the year, and to the credit side will be transferred the net profit, if any. The difference between the two sides shows whether he has spent more than he has earned, or vice versa.

Proper Percentage of Profit.

Supposing the above figures to approximately represent actual conditions, the outlook for the ensuing year would not be a cheering one. It would suggest that each year, by working his head off, the new business man could keep his investment at about the same point, and at the same time accumulate a lot of book accounts, some of which would be uncollectable, and an increasing amount of stock, some of which would be unsalable. But during the year some useful friends have been made; some valuable experiences have been gained; and a careful review of the balance sheet will suggest some mistakes and faults of the past year which will be carefully guarded against.

For one thing, a study of the balance sheet will show that the expenses of

running the business, witrout counting the interest on capital invested, amount to 14 per cent. of the amount of business charged on the books and 18 per cent. of the cost of labor and material during the year. He will then realize the foolishness of estimating a job of work at a profit of 15 per cent. over its cost. The percentage of the cost of doing business varies with each year and is almost always lower as the amount of business increases.

It is a safe rule that the smaller the business the heavier the percentage of expenses. And yet it is usually the man with the small business who will cut the prices and work more and harder under the mistaken idea that he is coining money. Perhaps the customer will appreciate such favors and continue to patronize the business. Not so. He will seek for just such another fool the next job he has to do. A customer worth having, on the other hand, will respect a man for asking a fair price and sticking to it. He will find, too, that friends of long standing will sometimes refer to that fact, not with the idea of paying more than the accustomed price, but with the expectation of receiving a substantial reduction in the bill. These things met pleasantly and firmly will right themselves.

How Low Bidder was Eliminated.

Ask your fair price, based on the information you have gained from your balance sheet, and stick to that price. Do your own figuring. Don't rise to the bait that "Mr. B. has figured to do the work for $75, and if you meet his price you can have the job, out of pure friendship for you." An incident reliably vouched for is related of a bottom price bidder in ——. This low price man was a good friend of a general contractor, and it gradually dawned on the plumbing and tinning contractors why it was that Mr. Jay was always $5 or thereabouts lower than the other bidders on the same work. He first saw the other bids and then put in his own bid. They did the figuring and he did the rest. A good sized job was in prospect, and the plumbing fraternity, leaving out Mr. Jay, agreed to place bids ranging around $900 less than a proper price for the job. They further agreed that if by any chance one of them was awarded the job they would bear a pro rata share of the loss. With great satisfaction they each in due time received the customary notice that Mr. Jay, being the lowest bidder, had been awarded the job. The job proceeded to a substantial length before Mr. Jay discovered his mistake, and, being no better than the general run of mortals, preferred bankruptcy to pulling himself out of the hole he had dug for himself.

Merchandise.			
Cost of labor and material	$3,805.00	Merchandise sales	$5,000.00
Profit and loss	2,195.00	Inventory of stock on hand	1,000.00
Inventory	$1,000.00		
	$6,000.00		$6,000.00
Loss and Gain.			
Running expenses	$ 700.00	Gross profit	$2,195.00
Lost accounts	150.00		
Net profit	1,345.00		
	$2,195.00		$2,195.00
		Net profit	$1,345.00

Honesty not Appreciated.

The writer knows of a certain case where the plumber named an estimated price on some work and when the work was completed found that he had asked almost double what the job had cost. He thoughtfully made his bill less than the estimate. Naturally the customer was expected to be grateful. He was not. He was cock sure that all plumbers were dishonest and at once came to the conclusion that he was entitled to a much more substantial rebate. He began inquiring of his neighbors the cost of similar, or nearly similar, work in their experience, and incidentally naming the enormous sum his plumber charged for the same work. For his generosity the plumber got a lot of free left-handed advertising that injured his trade in that locality.

Loss Through Poor Advice.

Here is the true story of how Mr. M. was bitten through taking the figures made for him by a boiler salesman who styled himself a heating engineer. Being a resident of the small town in which the church to be heated by steam was located, Mr. M. and his salesman friend figured on the job. The writer figured on the same job, and figured enough radiation to supply the heat losses on a windy day through dried and shrunken wainscoted walls and ceiling. The difference in the amount of radiation was considerable, and as Mr. M. and the salesman jointly and severally guaranteed the job, Mr. M. was awarded the contract. The Board of Stewards, however, stipulated for a larger boiler than they had specified as a precaution, and paid the difference. This was the only concession to the assertion made by the writer that his, the writer's figures, were the more correct. The writer was later called in by the minister, who stated that the job was lamentably insufficient on a cold day. Mr. M. had been notified by the Board of Stewards and by himself, and he had done nothing but tinker the job since. The salesman disclaimed responsibility. The minister remarked that $175 was due Mr. M., and that it would continue to be due until Mr. M. had put in sufficient radiation to heat the church. As this was in March, it probably meant that Mr. M. would be paid some time during the following winter, after putting on it much additional expense.

He deserved no sympathy, in a sense, but the writer spoke about as follows: Now Mr. D., your Board of Stewards had the two bids, one with sufficient radiation to heat the church, and at a fair price. The other for a less price, and with correspondingly less value. Your board practically bought a cheap article for a cheap price. Do they now presume to demand a first-class article at the former cheap price, and ask Mr. M. to furnish that for which he never charged you? The writer has since learned that the necessary extra radiation has been put in the church under compulsion and without compensation.

Methods of Advertising.

Criticism will naturally arise in connection with the suppositious figures presented in the beginning of this article. One man will incline to cut down an estimate for one particular item, and another will be inclined to allow more for the same item. The figures are approximate. The sum of $150 may seem large to charge to lost accounts for the first year. Perhaps it is, and then perhaps it is too small. Lots of your brother craftsmen have accounts which they have not the courage to debit to lost accounts, but which will eventually reach the graveyard, being alread dead. It will be noticed that no item for advertising has been charged in the expense account. If no money has been paid to the printer the expense attached to fitting up a show window may be called advertising expense

The best and most lasting advertising is accomplished by doing good work and finishing it well. Have your customer satisfied if it is possible to satisfy him. Perhaps it will cost $2 to satisfy him, more than would be necessary to barely finish the job. Look on that $2 as part of the legitimate advertising expense. Would you pay, in advertising, $2 for getting a new customer? Then it is certainly worth while to expend that much for the sake of keeping a good customer.

Continued in Next Issue.

Figure Cost of Doing Business on Contracts

A Writer in the New York State Plumber Explains His System and Contends That Many Master Plumbers Neglect to Include a Percentage for Cost of Doing Business in Their contract Work.

Custom seems to have established methods in estimating plumbing contracts that are original, and sometimes fraught with danger to the participants; we mention them in the plural sense for there are always two parties, at least, to a contract, and the danger is apparent, whether one or the other parties to that contract is involved.

Custom has also established keen competition among the plumbers; this is partly explained by the large number engaged in the business, and also by the very easy entrance into the business, which, as a matter of fact, has been made an open gateway by the very parties who should have restricted it, by the adoption of sane and business methods.

Competition is good and, when healthy, is beneficial to all concerned, and the life of trade; but we have been going along recently into a competition which, when your bank roll is consulted, has been proved unhealthy, and if we might use our trade expression, "unsanitary." One of the first items that should be compiled by all sane business men is the cost of running their business establishment; that cost in many pursuits is given in charge of the most competent men procurable; in other words, it is considered so important by reputable business concerns that it is known of one man in a large establishment on Broadway, in New York, whose yearly salary is twenty thousand dollars; he not only fixes the cost of running the business of that firm, but he puts a price on each article, after adding running cost, which must show the proprietors a profit, or there would soon be a new man to do the figuring.

Every Item of Cost Figured.

Just for example, in this particular establishment, there is one item for the cost of wagons and the repairing of same; automobies, the tires of same, and the cost of repairing; the salaries of the help and the heads of departments; the care and feeding of the horse; the cleaning of the store and the lighting and heating; the deterioration of each and every item in connection with the buildings occupied by the entire establishment.

In other words, each and every item of the running of this vast establishment is considered, and seriously considered, by this man before a price is made even on a paper of pins, and when the price is made for the public to purchase this paper of pins, there is on that price, not only a profit for the sellers, but that paper of pins does its share to bring in the cost of running the business, as well as the largest item sold by the establishment.

The reason the man in question has this important position, with the large salary attached thereto, is that the man who makes the price and knows what the articles can be delivered to the public at, with a profit to the proprietors of that store, plus the cost of running the business, is considered the anchor of the place, and without such a man the business would go to the dogs.

Plumbers do it Differently.

We plumbers figure our business in an entirely different way; we are glad to get any size job at 10 per cent. profit, which, when whittled down to a plain business proposition, and the cost of our telephones, wagon hire, bookkeeper, and the time of the man who looks after your work, adding the 6 per cent. that many, many of us pay when compelled to borrow at our banks, results in a profit of nothing. To verify this, look at the bank rolls of some of the brightest practical men in our business to-day; look up and down the line at the men who have been actively engaged in the plumbing business for the past twenty or twenty-five years, and the writer challenges the production of 50 per cent. of the entire trade who can show $25,000 or $1,000 per year for each year they have been engaged in the business. The writer does not make this statement in any sense as a boast or threat; nor is he at all pleased with his own cash account; but he is a man who has studied the plumbing situation pretty thoroughly.

This condition should not be, and it is not too late to change the conditions. A close application of the laws of human nature, as applied to everyday life, might result in you looking out for yourself first. By looking after the other fellow, do not take work at any one else's figures but your own. Do not fritter away your life by the acquaintance of architects, owners and builders that give you a chance to meet the lowest man's figure. You don't call that a preference, do you? Surely, that man is not a good business friend; and do not let the glamor of beating another man, at his own price, mind you, lead you to the forgetfulness of your business education, which should have taught you that your business costs you something to run. That you should get more per year than the men who are working for you, and that one of the items of every contract you assume should bear the item of "cost of running your business." All credit should be given to a man who can do work so much cheaper than any one else, and there are many reasons advanced for the difference between bids. Take off your hat to a fellow that can show you something. Particularly a fellow that gets away with the job at a price that you cannot see your cost in. But remember one thing, that your material and labor on that job would cost you something, and that amount is in your books, and until you learn from the other fellow how he does it, do not try and fool yourself on your own cost of any job. It will pursue you like a nightmare and loss of sleep is an item we have heard repeatedly is so serious to both the cheap man and the other fellow.

Some Questions to Consider.

How many of us on a large job, requiring the constant attention of a good man (who cannot find time to handle a tool), figure his wages in the time account?

How many men in estimating a large job figure the loss of time in testing?

How many of us figure anything for sundries? Sundries is a large item at the end of each year, and you can prove it by looking up and seeing what you pay for red and white lead, boiled and cutting oil, oil cans, stocks and dies, cutters and pins and fixtures for same, which the ordinary helper finds time to break and not by working it on pipe either. Think the sundries account over and see what you owe yourself.

System figuring covers it, some say. I have done some large work and some small work. I have done in some cases two similar houses, even going to the extent of calling them twin houses, and I have to admit that I have as yet found no system that can be relied upon; that is, to be the successful bidder, or the lowest man, and come out with a profit. I admit I can give a figure on a system, and be the high man, but ordinarily the high man of our trade to-day, men who do get a preference, do not use a system. You will find the fellow who is cheap always ready with a system.

To briefly explain my system, I quote one case of a large building I did within a year (100 x 100 and twelve stories high), with a complete galvanized drainage system throughout. You will surely give the writer the credit of knowing what the job cost him when done. That

is surely the time when your system can either be patted on the back or thrown out the door; that is when you have a finished job on your hands and commence to look for your profits. Well, a short time ago another job came along, exactly similar to the other one, the same number and same style of fixtures, and it was taken for one-half of the former price, but not by the fellow who did the first one. The second job is in a rough state as yet, but I believe that the profit of that contract will have to be found with a search

Every time you shoe the horse or put a tire on your automobile, see if you are getting it out of the business.

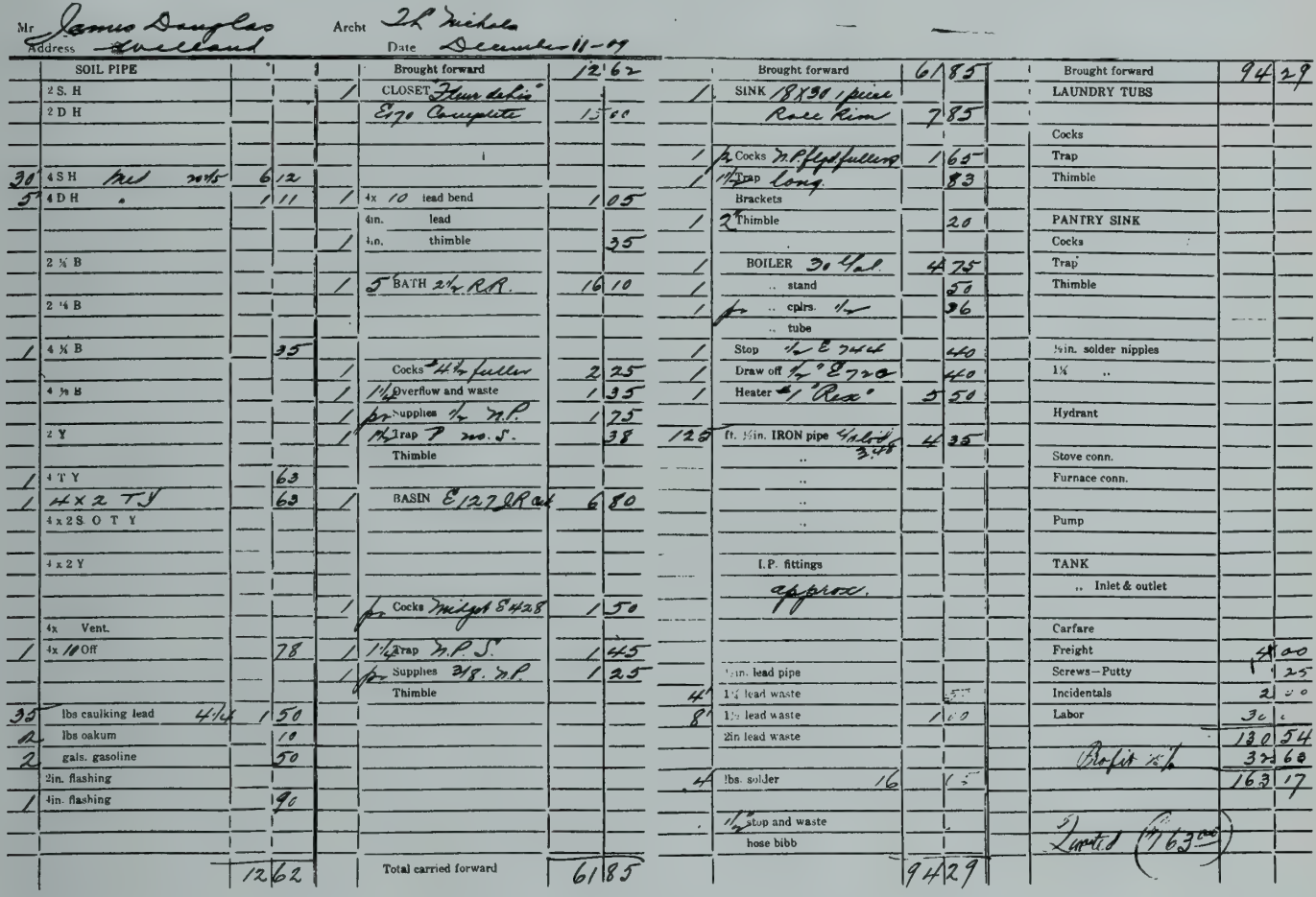
Every time you come in on a hot day and feel the welcome and cooling waves of the electric fan, look and see who is paying for the current. Every time you send a dozen helpers or laborers to a job to move some pipe or erect a lockup, see who is paying their time, and try and find that item of labor on the estimate sheet of that job.

As a matter of fact every turn that you make or every time you put your hand in your pocket to replenish the

should be one of the items of expense of that contract."

PLUMBING ESTIMATE SHEET.

A very serviceable estimate sheet for plumbing work has recently been prepared by W. H. Cunningham, western Ontario salesman for the James Robertson Co., Toronto. It is printed in two page form, the second page folding over and the two then being ready to put on a letter file. The form is very complete, with many blanks for extra items. Such items as carfare, freight, incidentals and


Mr James Douglas Archt J. R. Nichols
Address Eastland Date December 11-09

	SOIL PIPE			Brought forward	12 62
	2 S. H		1	CLOSET Flush delio	
	2 D H			Etna Complete	15 00
30	4 S H Red 20 lb	6 12			
5	4 D H "	1 11	1	4x 10 lead bend	1 05
				4in. lead	
			1	4in. thimble	35
	2 ¼ B				
			1	5 BATH 2½ R.R.	16 10
	2 ¼ B				
1	4 ¼ B	35			
			1	Cocks 2 Nickel fullers	2 25
	4 ½ B		1	1¼ Overflow and waste	1 35
			1	for Supplies ½ N.P	1 75
	2 Y		1	1¼ Trap P no. S.	38
				Thimble	
1	4 T Y	63			
1	4 x 2 T Y	63	1	BASIN E127 JR Nickel	6 80
	4 x 2 S O T Y				
	4 x 2 Y				
			1	for Cocks Milgot E428	1 50
	4x Vent.				
1	4x 1½ Off	78	1	1¼ Trap N.P. S.	1 45
			1	for Supplies 2/8. N.P.	1 25
				Thimble	
35	lbs caulking lead 4¼	1 50			
2	lbs oakum	10			
2	gals. gasoline	50			
	2in. flashing				
1	4in. flashing	90			
		12 62		Total carried forward	61 85

	Brought forward	61 85
1	SINK 18x30 1 piece	
	Rose Rim	7 85
1	for Cocks N.P. Kyle fullers	1 65
1	1¼ Trap Long	83
	Brackets	
1	2 Thimble	20
1	BOILER 30 4 ad	4 75
1	" stand	50
1	for " cplrs. ½	96
	" tube	
1	Stop ½ E 744	40
1	Draw off ½ " E720	40
1	Heater 4/ "Rex"	5 50
125	ft. ½in. IRON pipe 4 ad 3.48	4 35
	"	
	"	
	"	
	"	
	I.P. fittings	
	approx.	
	½in. lead pipe	
4'	1¼ lead waste	
8'	1½ lead waste	1 00
	2in lead waste	
4	lbs. solder 16	1 [illegible]
1	½ stop and waste	
	hose bibb	
		94 29

	Brought forward	94 29
	LAUNDRY TUBS	
	Cocks	
	Trap	
	Thimble	
	PANTRY SINK	
	Cocks	
	Trap	
	Thimble	
	½in. solder nipples	
	1¼ "	
	Hydrant	
	Stove conn.	
	Furnace conn.	
	Pump	
	TANK	
	" Inlet & outlet	
	Carfare	
	Freight	4 00
	Screws—Putty	1 25
	Incidentals	2 00
	Labor	30 00
		130 54
	Profit 25%	32 63
		163 17
	Limited (163.00)	

Reduced Form of Plumbing Estimate Sheet Designed by W. H. Cunningham, of the James Robertson Co., Toronto, and Printed for Distribution by that Firm.

light so intense that it will not be even sharp enough to find anything but a good job plus a loss.

Some Items of Expense.

Now let us start fresh and remember that when we are forced to borrow money from our banks for which we are glad to pay 6 per cent., through the poor collection periods that we all go through, you should always remember that as one of the items of expense of running your business. Every time you pay telephone bill, remember that should be figured on every job you do.

Every time you pay your bookkeeper and office force, look up your books and find where the money is coming from.

cash drawer, or every time you sign a check to "bearer" for the shop and office expenses, try and find where you have figured that in.

And when you are through and see that you have expected it all to come out of the 10 per cent. and it don't and that you are only making journeyman's pay, don't fume and swear, but get some one to give you a good kick if you are anatomically unable to kick yourself, and at the same time make up your mind that you will not be the "sucker" the next time.

"In your anxiety to obtain a contract do not forget that a certain percentage of the cost of running your business

labor are included and it only requires the addition of a percentage of profit sufficient to cover the cost of doing business and leave a margin to the good, to have every item figured in. Copies will be mailed on request.

The Ontario Railway and Municipal Board have approved by-laws under which Cobalt township is to spend $75,000, and the town of Cobalt $25,000 upon a water works system.

By installing a gravity system, which will do away entirely with maintenance and operating expenses, Hamilton hopes to save save about $25,000 a year on the new west end sewage disposal plant, which will be built next year

Become a Specialist in Vacuum Heating

"Phoenix" in Domestic Engineering Urges Heating Contractors to Use the Vacuum System in Residence Warming as Well as in the Heating of Large Buildings.

Vacuum heating represents one of the greatest advances made in our craft in many years, and from present appearances has come to stay.

Allowing for the natural mistakes of instalation, which occur at times through ignorance, and so have hindered its progress, vacuum heating has advanced with gigantic strides in the last five years.

To-day instead of being considered an experiment, it represents the very best practice of the most advanced element of the trade.

While the first cost may be somewhat in excess of an ordinary gravity steam heating job, it can be installed and run at a less cost than a hot water job, and has none of the defects of hot water, and about all of its merits. Is it not far easier and cheaper to heat the water in a steam boiler, than it is to heat several times the same quantity of water in a hot water job of a similar size?

Now if, with steam, a system can be found that will hold the heat as long as the hot water job does, this system will certaily possess two advanges. First, quicker results in firing up. Second, less fuel consumption.

It is claimed by certain manufacturers of various systems, that their vacuum apparatus will save over an ordinary gravity system anywhere from 25 to 50 per cent. of the fuel required to run the job. This claim should certainly interest every person who has a steam heating plant to run, no matter whether it be large or small, for there are plenty of systems on the market to-day applying to all sizes of steam jobs.

For practical use a vacuum may be defined as an inclosed space from which the air has been almost entirely removed. It is admitted that is is impossible to obtain a complete and lasting removal of all the air, but it is intended to approach this point as nearly as possible..

Gravity Steam Difficulties.

One of the greatest difficulties in maka gravity steam job heat up quickly and in a satisfactory manner is the presence of air always in the system. This air must be driven out, before the radiator will heat, and when the radiator is cold the same operation gone through again, and so on forever.

Now this requires a certain amount of pressure in the very best planned job installed in the most careful and practical manner.

Any person who has ever boiled water at the top of a mountain, knows at how much lower a temperature the water boils. What was the cause of this? Simply because there was less air pressure on the water at the top of the mountain than at the base, or in the valley.

Consequently, if we can obtain a condition in our steam pipes whereby the air pressure will be partially removed, it follows that the steam will have a chance to circulate much more freely and rapidly. This is, in general, just what the modern vacuum job does, the effect being accomplished by various different means peculiar to each special system.

The idea governing the means used to obtain a vacuum in steam jobs may be found in the two simple words push and pull. In various systems pumps are made use of to pull the air from the pipes and the condensation which would retard the circulation of the steam or vapor.

The other class of apparatus pushes, or drives out the air before the steam (similar to the ordinary gravity job), but closes down automatically when the air is exhausted, and prevents the return entrance of the air. In other words this latter class of systems resemble somewhat in action a gigantic air valve.

On one of the later systems of vacuum heating apparatus the following idea, in general, is made use of: Suppose a tank containing about 1,600 cubic inches of space were filled with steam.

Now suddenly condense this steam and you have about one cubic inch of water, and all the rest of the space in the tank remains a vacuum.

Vacuum System Explained.

Suppose that this tank of vacuum were to be properly "hooked up" to a steam job. The action would be for the air and condensation in the job to rush into this tank under the strong and decided continuous pull of the vacuum. Now control this automatically and with accuracy, and you have a working vacuum system. So much for some of the principles of the vacuum heating system. Regardless of any certain system (which we do not desire to discuss), it must be perfectly plain to anyone that the presence of air in the system is an undesirable proposition and is a constant source of needless expense.

If the air is either removed, or kept out (as the case may be), it must be admitted by the most obstinate that the steam will circulate easier and more rapidly. Every degree less than 212 degrees, at which we can boil water and furnish steam, means a certain amount of coal saved each day. I once had a practical fitter tell me that he had boiled water at 117 degrees F., but I did not see the job in operation.

This daily amount of coal saved grows to tons before the end of the heating season is reached, and in a very few years will more than pay whatever extra sum the vacuum outfit may have cost, and during all this time additional comfort and ease of operation has been enjoyed by the owner of the apparatus.

Another decided advantage of vacuum heat is that no stench from the air valves, exhausting air into the room, is inflicted upon the owner every time the system is fired up. A vacuum job heats quicker, easier and has a greater range of temperature than a hot water system and is no more difficult to make tight (with respect to the piping), than is a hot water plant. In the majority of cases the trouble from leaks is not with the vacuum system, but is with some careless or leather headed fitter, who is too shiftless to do his work properly.

Some Advantages Described.

This latter point has been proven too many times to need any argument. In vacuum systems where mechanical means are made use of to create the vacuum it is possible to set radiators on a level with the boiler, or even entirely below the boiler's water line, and still heat the ratiators in a satisfactory manner with steam.

This feature is one which should commend itself to architects, heating engineers and contractors, as it disposes of a very perplexing question which frequently arises, and that is: "Can't I warm this basement without having heating coils strung all over the ceiling?" Sure you can. If your heating engineer can't tell you, ask us.

It is found, in many cases that vacuum systems can be connected to plants where the mains are rather shy on furninshing enough steam for the job.

It can easily be seen what a relief it would be to an over taxed main, to have the air almost entirely removed so that it could deliver the steam practically unhampered. Vacuum heating has also been found of immense advantage in assisting the utilization of exhaust steam in large institutions and factories by many of the various sys-

tems which have been upon the market for some years.

At present, master fitters are awakening to the fact that it is a paying proposition to instal vacuum heating. I believe that any shop that starts in on this line, will in time get so interested, and successful at it, that they well become specialists, and before many years will find themselves putting in practically nothing else. Of course, this means much work along the line of "enlightening the natives," for there are many people less than one thousand miles from Chicago, who have not the remotest idea of what a vacuum is, let alone what vacuum heating might be.

The tendency has been that better work, and better systems make satisfied customers, and also better prices, and because a customer fails to understand, or refuses to be convinced, that vacuum heating is good, is no reason why any man should not preach this doctrine. Get wise yourself and then show your customers that vacuum heating is a practical proposition and it is for their interest to understand it, from all points of view.

The time has passed when this form of heating is to be applied to large jobs only, and it is for the interest of every man running a plumbing and heating shop to interest his customers and show them how and where he can better their jobs and heat their dwellings more cheaply and conveniently.

Vacuum System for Residence Heating

The Weight of Air and its Influence on the Boiling of Water—Utility of Vacuum System and Savings in Fuel Outlined by G. D. Hoffman.

It is a very common thought among many that the use of a steam-heating apparatus is necessarily attended by noises of various kinds in the pipes and radiators, and also by the greatest of all evils, viz., overheating in mild weather.

With a poorly and improperly installed system of steam-heating these theoretical objections to a steam-heating apparatus are very apt to prove actual objections, but with a steam-heating apparatus installed in a proper mechanical manner, in accordance with the latest though on this subject, all possible theoretical objections vanish into thin air in face of the ideal service obtained from this system of heating.

The goal sought by all heating systems is noiseless service and economy of fuel, combined with heating comfort—that is, heat just right in the living-rooms. The two principal causes of fuel-waste, particularly in connection with a steam-heating apparatus as ordinarily installed, are over-heating in mild weather and the exhaustion of fuel gases at too high a temperature through the chimney. All this is because of the limited range of temperature within the apparatus. The water in the boiler must be heated up to 212 degrees before you generate any steam and get any heat upstairs, thus limiting the range of temperature within the apparatus to temperature above 212 degrees.

Custom as well as comfort has decreed that 70 degrees F. is the proper degree of heat to be maintained in human habitations during the winter months. The amount of heat required to maintain this 70 degrees depends wholly on the heat-loss caused by the difference between the inside and the outside temperature. The outside temperature is a fluctuating one, while the inside is (or should be) fixed (70 degrees). To maintain this fixed inside temperature against the fluctuating outside temperature necessitates a fluctuating or flexible heat-supply, and the more flexible or more easily controlled the heat-supply is, the greater the economy possible in the apparatus supplying the heat.

During the past six years it has been demonstrated by the advanced thought of heating engineers that it was possible to obtain this desired flexibility of heat-service within the apparatus by equipping the ordinary low-pressure steam-heating apparatus with appliances designed to prevent the return of air in the apparatus after it was once got out.

It is a well-known and scientific fact that air has weight and gravitates towards the earth's surface the same as any other body, its weight being 14.7 lbs. at sea-level. It is this air-pressure that prevents water from boiling or vaporising into steam at temperatures below 212 degrees. If, therefore, this air-pressure is removed from the water, it is possible to vaporise the water at temperatures as low as 98 degrees, which is the true boiling temperature of water under complete vacuum, or under complete relief from air-pressure.

Steam is water in a gaseous state occupying a space 1,700 times greater than the water from which it emanates. Steam and air being of different density will not mix, and when water expands into steam in a steam-heating apparatus there is necessarily a pushing and crowding of the air in the apparatus into the pipes and radiators as the pressure increases. In order, therefore, to permit the steam to circulate into and through the radiators, it is necessary to supply or provide an outlet for the air. This outlet is generally designated as an air-valve, and in approved systems, as ordinarily installed, this valve permits the escape of air but automatically prevents the escape of steam. When the air has been entirely expelled and the system is full of steam the apparatus is giving its maximum service, unless high pressures of steam are carried.

It might be well to state at this point that pressure of steam and temperature of steam travel together, there being an approximate temperature increase in the steam of 2¾ degrees for every pound of pressure added. The range of temperature within the heating apparatus, as ordinarily installed, is therefore limited to the range of pressure carried, and this range of pressure is generally so narrow that the radiator-temperature may be considered as fixed.

Low Pressure and Steam Heating.

Since it is air-pressure that prevents the vaporisation of water at temperatures below 212 degrees, it follows as a natural sequence if we can prevent the return of this air-pressure to the apparatus when the gauge indicates pressure below that of atmosphere, that we can range the radiator temperature within the apparatus from 160 degrees F. to 230 degrees F., or from 20 inches of vacuum to 6 lbs. pressure above atmosphere. This system of heating is commonly designated as the combined low-pressure and vacuum system of steam heating. This range of temperature within the apparatus puts within the control of the operator a flexibility of heating service that is possible with no other system of heating.

The supreme efficiency test of any heating system is the prompt response to a demand for heating service. "Heat service on tap" is the slogan of vacuum-heating. The operator desires "more heat," turns a valve or damper, and the raditor temperature almost instantly rises. He reverses the demand, and almost as promptly the heat diminishes. The intelligent operator, therefore, has, in connection with a combined low-pressure and vacuum system of steam-heating, always at his command just the required service.

The principal cause of fuel-waste, particularly in connection with steam and hot-water systems as ordinarily installed, is over-heating in mild weather. The flexibility of service possible in connection with vacuum-heating is not only conducive to the comfort of the user, but it also minimises the over-heating evil. The resultant fuel-economy thus effected is so marked as to make a vacuum system of heating commendable from the point of view of cost maintenance. Maximum service in return for minimum fuel and labor expenditure seems almost paradoxical, and yet it is a fact that this result is easily maintained in vacuum-heating. The requirements, therefore, may be briefly summarised as follows:—

Cost Higher, But Utility Greater.

1. A properly designed steam-heating boiler has a maximum amount of heating surface combined with a minimum water-capacity.

2. A boiler so constructed is necessarily supremely sensitive to heat changes of fire, and when such a boiler is installed in connection with a vacuum system of steam-heating, the slightest change in fire-temperature results in a corresponding change in steam-temperature in the radiators.

3. A steam-heating apparatus properly equipped with vacuum appliances to seal the system against the ingress of air enables the operator to circulate steam throughout the apparatus at temperatures ranging from 160 to 230 degs. The fluctuating outside temperature can thus be easily met by a fluctuating radiator-temperature which insures a fixed and constant indoor temperature.

Although the vacuum system of steam-heating is approved by advanced heating engineers, the fact that its cost is a little more than the ordinary low-pressure steam system deters many from advocating its use. The consumer, however, is directly interested in demanding the installation of this latest and most approved system of radiator-heating. The resultant fuel-economy, combined with the flexibility of service, insures such dividends in saving of fuel-cost, and added heating comfort, that the additional first cost is soon fully repaid, while the benefits continue as long as the building stands.

Letters from Correspondents on Trade Problems

The Editor Invites Short Letters and Sketches Describing Problems Met With or Original Methods of Doing Plumbing or Heating Work—Name of Writer Required, Though Not Necessarily for Publication.

PUMP REFUSES TO WORK.

Editor Plumber and Steamfitter,—I enclose sketch of a pump installed over a year ago, and would like to know why it will not work when there is about six feet of water in the well, although when the water is down to two feet it will pump about two pails, after which it must be primed and vigorously worked about four minutes. The foot valve, plunger and seat valve works satisfactorily. The lift is only 22 feet with a draw of 140 feet of 1½ inch galvanized pipe. The cylinder is 5 inches by 10 inches stroke. The top of the well is bout 3 feet higher than the pump cylinder W. J. B.

Wingham, Dec. 3.

In answer to this enquiry, M. J. Quinn, manager of the National Equipment Co., Toronto, whose specialty is water service systems, writes :

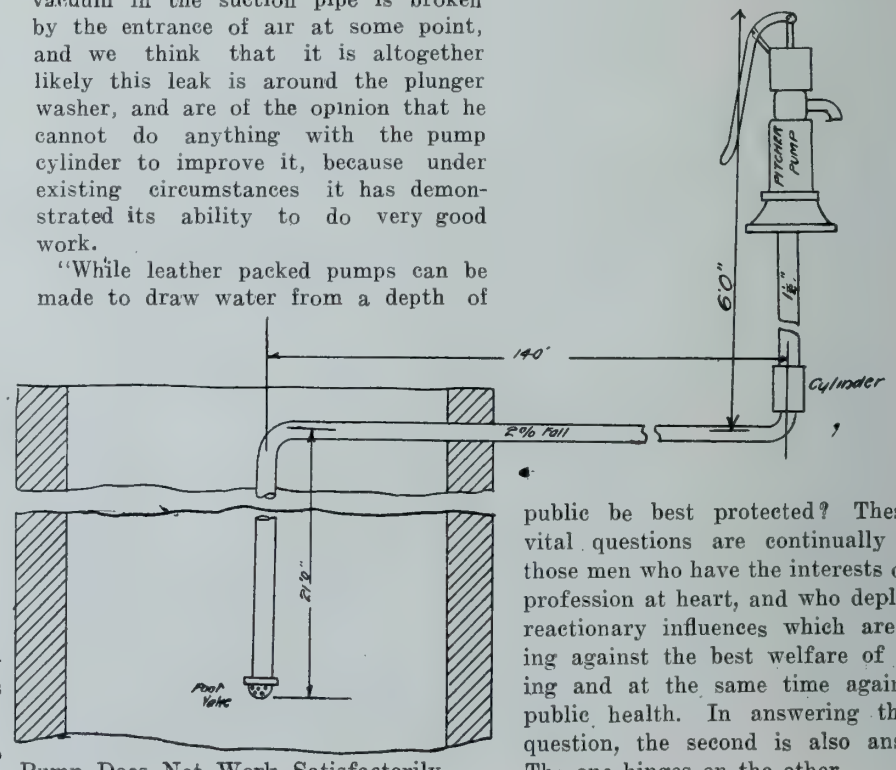
"The reason the pump referred to does not work when the water in the well is at the lower levels is that the vacuum in the suction pipe is broken by the entrance of air at some point, and we think that it is altogether likely this leak is around the plunger washer, and are of the opinion that he cannot do anything with the pump cylinder to improve it, because under existing circumstances it has demonstrated its ability to do very good work.

"While leather packed pumps can be made to draw water from a depth of 28 feet, they are never guaranteed by the manufacturers for work of more than 20 feet, because of the practical impossibility of preventing the entrance of air through and around the leather cup washers after they have been in use a short time.

"There is just a chance, of course, that air may be escaping into the suction pipe at some other point, and that only when severe work is being done is the leak sufficient to prevent cylinder from drawing water.

"It may be that the socket on the suction pipe below the 20 foot level in the well leaks and when it becomes uncovered by the water level falling the air enters at that point and breaks the vacuum.

"We note that the suction pipe falls from the well to the hose which in our opinion is bad practice. We think the only safe way to improve the situation would be to drop the horizontal section of the suction pipe 3 or 4 feet, and lower the pump cylinder down to the same distance."



Pump Does Not Work Satisfactorily.

MONTREAL'S PLUMBING EXAMINATIONS.

Editor Plumber and Steamfitter,—Although the laws regulating the granting of plumbing licenses in Montreal are not so inadequate as in the case of Toronto for instance, yet they are nothing like strong enough to prevent those abuses which exist in greater or lesser degree all over the country.

How can the status of the plumber be uplifted, and how can the general public be best protected? These two vital questions are continually before those men who have the interests of their profession at heart, and who deplore the reactionary influences which are working against the best welfare of plumbing and at the same time against the public health. In answering the first question, the second is also answered. The one hinges on the other.

Those who are earnestly striving to organize the trade advocate the improvement of the by-laws so as to make it impossible for none but the experienced man to do plumbing, and appoint qualified inspectors whose rulings will be respected. There is the solution of the whole difficulty. Elevate the plumbing profession and the health of the public is safeguarded.

Montreal goes a little further than Toronto in demanding a license fee of $5 and a form of examination. But neither goes far enough. But in Montreal there is the great loophole for abuses—the granting of a license to a firm employing a workman competent enough to pass the examination—not a difficult matter.

Montreal master plumbers advocated a fee of $25 when the law was framed, contending that if a qualified man cannot afford to pay $25 for a master's license, then he cannot afford to set up a shop. The master plumbers' license should be to the journeyman what the master's certificate is to the first mate.

A would-be master should have to pass more than a test in wiping a joint and the answering of a few theoretical questions. The Montreal examiners, no doubt, do the best they can with the means at their disposal. It is impossible to give a thorough practical examination unless there are the facilities for it, and therefore it is up to the health authorities to see that their examining board are given the room and the appliances. Theory is of no use without practice, and wiping a joint, though a very good test in itself, is not broad enough to cover the whole plumbing field. The examination should be both practical and theoretical, in charge of a strong examining board, and they should have every opportunity to hold and to carry out their examination. In this way would all the undesirables be eliminated, and a prestige and honor given to the license that it does not at present hold.

Montreal has plumbing firms being able to obtain a license if they employ a plumber who is competent enough to pass the examination. This is a loophole for a great many licenses being obtained that should never be granted. The practice misleads the public, while at the same time encouraging excessive competition and bad work. The public should be protected in such cases. If a citizen calls upon a man who has set up as a master plumber, he believes that that man knows his work; and he believes him capable of looking after the health of his family. He does not know that this man only obtained the right to put up his sign through a workman in his employment, a workman who may not now be with the firm. The journeymen, too, working for this man have no respect for him, neither is there any check on their work. "Any old job will do for the boss," and so shoddy plumbing work goes in, and when it is found out, as eventually it generally is, the plumbing fraternity as a whole is blamed. The men who turn out the best work are the men who know that the boss is more qualified than they are, and one whose praise is appreciated just as his censure is a spur to better work in the future.

The obtaining of plumbing licenses should be the same as in the case of stationary engineers and firemen, whose licenses go with them. If the latter are with a firm who take advantage of the license, then when they leave, the firm must have other licensed men. As it is now in Montreal, the plumbing license remains with the firm, although the man who obtained it may be dead or far away, while there is no check on this firm to see that they have employed another fully qualified man in his place.

Then if the judgment of the inspectors is to command any respect from plumbers, if their presence is to be feared on account of any work not done correctly, then they must be qualified men—men who have passed examinations as hard in their line as master plumbers in theirs. It is absurd that an experienced plumber should have his work criticised by a man who may have been a cab driver or a hall porter. Inspecting plumbing should be made a profession, just as much as plumbing.

The day will come when the master plumber or sanitary engineer will occupy that position in the world that he should fill; when the public will no longer regard him with suspicion, but will look upon him as a member of an honorable profession.

F. J. A.

Montreal, December 7.

MASTER PLUMBER BECOMES MERCHANT.

How a plumber can develop a retail business, not only without interfering with his primary vocation, but rather stimulating it, is exemplified in the case of Paul R. Krasel, St. Catherine St., Montreal. Mr. Krasel started in 1901 as a master plumber in a small way on St. Catherine Street, although not in the same location that he is at present. As his business grew, and his ambitions with them, he made three moves until he finally settled in the premises he now occupies. All this time Mr. Krasel had solely occupied himself with plumbing and heating, and it was not until he was settled in his present location that he thought of branching out into the retail trade. It was in a way necessity becoming the mother of invention.

Mr. Krasel found that his shop was too large, and that those who were minding it for him while he was out on a job had many unproductive hours. This was a most unprofitable arrangement as any business man can see, and Mr. Krasel, who owes so much of his success to his business methods and strict accountancy, could not submit to it without a protest. His protest took the practical form of getting in some lines that would help fill his large shop, and bring in some revenue, and so about the year 1905 he started selling lighting supplies, fixtures, and general hardware. Needless to say he found the experiment pay.

Not long was it before the spare room was taken up by new lines; not long before the plumbing business was extended until an annex had to be built at the back, and now Mr. Krasel instead of having too much room is so overcrowded, not only in his plumbing business, but his retail business, that he has no space to turn, and must extend in some way. All the way through neither side of his business has been made subservient to the other, and thus Mr. Krasel, not only found a way out of the difficulty of too much room and unproductive labor, but he created what was a great source of revenue, and yet at the same time a stimulation to his primary industry.

Mr. Krasel ascribes his success to certain business methods that in many instances plumbers are found sadly wanting. From the start he kept his books in good state, and recognizing that a plumber was not intended to be a philanthropist he looked carefully after his accounts and saw that they were collected. Again he took that extremely wise course, and one that has a greater influence in swinging a business than is generally recognized, of securing his trade discounts by always paying at 30 days. Let those plumbers who do not take their discounts count up what they lose in a year and they will be astounded. In addition Mr. Krasel sent out many circulars and advertised in the papers. He early saw the necessity of keeping a good and complete stock, and that it pays to keep watch of the markets, and be ready to stock a good thing when it makes its appearance.

"My retail trade," said Mr. Krasel, "does not in any way interfere with the plumbing. On the other hand it has helped it. Customers come in for hardware, and find out that we do plumbing, and on the other hand my plumb-

ing customers look me up and then see the complete stock of hardware I carry. All I know is that I shall have to extend my plumbing shop, for I have seldom less than half a dozen men working for me."

"What should be the maxims of a plumber, Mr. Krasel, as your experience has taught you?"

"He should be businesslike. He should see to his accounts promptly, and pay his own at thirty days. He should be always on the outlook to increase his scope of business, and neutralize in every way unproductive shop space and labor. He should put his best work into his job, and above all hold out for a fair profit. Every job should pay for itself. It is a great mistake for a plumber to let one contract carry another. Then the plumber should advertise, and always be courteous and obliging."

Using such methods, Mr. Krasel, has built up for himself a fine business, and with due regard to locations there is no reason why other plumbers should not follow suit.

TALES OF THE TRADE

THE HUNTER WAS HUNTED.

Two heating salesmen who often meet on the road are big Jack Birchard, of the King Radiator Co., Toronto, and

BIRCHARD "JOSHING" ELLIS.
Heating Salesmen in Front of F. C. Hunt's Shop at London.

little Fred Ellis, of the Gurney-Tilden Co., Hamilton. Though unlike in stature and other ways they are both popular and successful travelers.

They met the other day in front of Hunt's new plumbing shop at London and the camera man snapped the pair just as Birchard was joshing Ellis for being chased by an irate farmer when out rabbit hunting with Ben Noble, of London, about five miles out from the Forest City, a fortnight ago. Fred's legs are short but they can move pretty fast and this saved his hide when the farmer tried to get revenge for the death of a Tom-cat Fred had shot in mistake for a rabbit.

Fred stands jollying pretty well and he can also tell a good story. His duties occasionally take him into the heating departments of large furniture stores and he tells one on an employe of such an establishment. The clerk had been sent one morning to take an inventory of the stock on the top floor, but taking a long time to report, the manager went up to see what was detaining him. On a table was the clerk, sleeping like a child and near-by was an empty bottle. On the table also was the inventory sheet with one entry with volumes of meaning: "One revolving kitchen range."

HARRY MUNDAY STUNG.

Harry Munday, the genial secretary of the National Association of Master Plumbers, recently was the victim of what he calls "a good one on him," but which probably to others, not so humorously inclined, would not appear so funny after all. Harry had a so-called "friend" who was in rather low water, so our secretary with a Samaritan-like spirit placed a job in the way of this friend, with one of his best clients. The work was was done, the bill sent in, and a cheque forwarded by the party concerned.

A few days later Harry had a letter from his friend, written from an address in Toronto, saying that no cheque had been received, and that it was either still at his former address in Montreal, or in the hands of the dead letter office. Would Harry, therefore, explain the matter to his client, and get a new cheque made out to him (Harry), cash it and send the money on to Toronto. "Sure I will," says Harry, "the poor chap probably is in great need of the money." So off he went, got a new cheque, cashed it, and sent a post office order.

But a rude awakening came when Harry's client later on called him up in great indignation to say that the dead letter theory was off, as his first cheque had been cashed in Toronto. "What had Mr. Munday to say about it." All that Harry could do, and did do, was to pay up the difference and laugh. And funny to say this "friend" is still writing to Harry asking for small loans to help him along.

CANDIDATE LOSES HIS WAD.

M. Matthews, salesman for the Canada Metal Co., Toronto, was the only representative of the plumbing trade, who was nominated for election to the Toronto Board of Directors in the Commercial Travelers' Association. This

M. MATTHEWS, TORONTO.
Who Sells Lead Pipe and Cracks Jokes for the Canada Metal Company.

is the first time "Mike" has run for office and his friends hope to see him elected.

Mr. Matthews has been getting the "ha, ha" for the past week or two on account of losing his expense money on his last trip to Woodstock. Mike had to answer a sudden call on the train, but when preparing to return to his seat he found that the railroad track had got more than he intended, his pocketbook dropping out of his trousers pocket. There was nothing for it but to telephone the house for money and W. G. Smiley, as Mr. Harris, senior, head of the Canada Metal Co., is sometimes known, responded with the desired cheque, and a joke about how much the railway "passage" had cost.

A new idea in a gas tap is on view at the License Department at the Parliament Buildings, Toronto. It is designed to prevent asphyxiation, and is so made that when the gas is turned off a tongue operated by a spring drops into a groove, making it impossible to turn the gas on again without operating the spring. In turning the gas off it is only necessary to turn the stopcock till the tongue clicks into place, when there is no further danger of a leank.

Gossip of the Plumbing and Heating Trade

Items Gathered in all Parts of Canada—Letters Invited From Subscribers, Giving Particulars Regarding Changes in Firm Names, Contracts Secured, Novel Methods of Advertising or Other News—Photos of Anyone or Anything Connected With the Trade Also Welcomed.

Frank F. Taylor, plumber, St. Paul, Que., has assigned.

G. A. Pratt & Co., plumbers, Montreal, have dissolved.

McCaffery Bros., plumbers, Thetford Mines, Que., have assigned.

Greenburg, Silverman & Co., plumbers, Montreal, have dissolved.

The net profits of the Smith's Falls waterworks for the year just ended amount to $11,000.

The temporary water system at Cobalt was frozen up for a week at the beginning of December.

The sewerage works at Vernon, recently finished, are said to be the most complete in Western Canada.

Levi Corrier, plumber, Cornwall, and Miss A. Ritchey, Fifth Concession of Lancaster, were married last week.

Lessard & Co., plumbers, Montreal, have dissolved. The business will be continued under the old name by Frank J. Lessard.

The contract for heating the postal station at Point St. Charles, Montreal, has been awarded to Alex. MacKenzie & Co., for $1,860.

The gas by-law granting a franchise to the Sterling Natural Gas Co., was carried at Port Colborne on Dec. 9, by a majority of 22.

The tender of the Hick Hardware Co., Lethbridge, for a low-pressure steam-heating system for No. 2 fire hall in that town was accepted.

Fire did damage estimated at about $8,000, in the premises of McGregor & Reid, plumbers and electric supplies, at Peterboro last week.

James E. Yates, of Brown & Mitchell, plumbers and steamfitters, Brandon, Man., is taking the baths at Mt. Clemens, Mich., for rheumatism.

The tender of the Cobbert Heating & Plumbing Co. for twenty tons of pig lead at $3.59 per 100 lbs. was accepted by the Victoria city council.

C. H. Bakemeyer, Ontario sales representative for the Canadian Wolverine Co., Chatham, will spend the Christmas holidays at his old home in Indiana.

Tenders have been called for the purchase of the stock of the Ladysmith Plumbing & Heating Co., of Ladysmith, B.C. The stock amounts to $2,653.10.

The assets of Stevens, Duquette & Co., plumbers, Montreal, have been sold.

R. Montgomery Rodden, Montreal, has awarded the contract for the plumbing and heating of four houses there for John Stewart & Co., to Gardner Bros., Westmount.

T. Aird Murray's statement that the new $175,000 sewage disposal annex plant at Hamilton, was obsolete before it came into use, has caused some stir at that city.

The Sanitary Plumbing Mfg. Co., Granby, Que., are rushed with orders and contemplate enlarging their factory at an early date to meet the increasing demand for their goods.

The City of Toronto will open a showroom filled with electric fixtures for public display, when the Hydro-Electric power is supplied to the city. It will, however, not be a salesroom.

S. J. Cherry & Co., North Bay, have just completed extensive alterations and additions to the plumbing and heating work in the Royal Victoria Hospital and the McIntyre public school at that place.

H. S. Cooper, who has just concluded 50 years of service with the Robert Mitchell Co., brass founders, Montreal, and placed on the superannuation roll, has been presented with a purse of gold, by his fellow workmen.

Wm. M. Chamberlain, of the Wright Mfg. Co., steam specialties, Detroit, whose agents are Darling Bros., Montreal, has been on a visit to Canadian headquarters. Mr. Chamberlain also spent a few days in Toronto.

Wm. J. MacFarlane and Lee Hays have opened a plumbing shop at 659 Broadway, Vancouver. Both Mr. MacFarlane and Mr. Hays were formerly in business in San Francisco and Oakland, Cal. The new firm is known as The MacFarlane Plumbing Co.

The explosion of a boiler in St. Patrick's Asylum at Ottawa, on December 4, wrecked the basement and lower floor of the building, but all the inmates, aged people and children, of whom there are 200 in the institution, miraculously escaped injury. The damage will amount to several thousand dollars.

The Taylor-Forbes Co., Guelph, have purchased additional property adjoining their radiator plant in order to make possible the extension of their works.

G. S. Dorman, who was for many years foreman of the plumbing and steamfitting department of Bruce, Stewart & Co., Charlottetown, has left for Moncton, where he will reside in future. Previous to his departure he was presented with a handsome gold chain.

The following firms were awarded contracts for water fixtures by the South Vancouver council: Crane & Co. for galvanized fittings, amounting to $147.13; the Terminal City Iron Works, for cast iron specials, $2,033.36; the Canadian Fairbanks Co., for galvanized iron piping, $2,350.80, also for brass goods, $1,814.68; Robertson, Godson & Co., for hydrants at $48 each.

W. J. Boyce, plumber Wingham, Ont., has completed the following contracts during the past year: Plumbing and hot water heating in Dr. Irwon's residence, $640; plumbing in Dr. Kennedy's residence, $178; plumbing and furnace heating in F. W. Vanstone's residence, $235; plumbing and furnace heating in Geo. Mason's residence, $370; plumbing in Methodist parsonage, $155; steam heating in Presbyterian church, $800; plumbing in Geo. Walker's residence; furnace heating in R. Vanstone's residence, and baths in Hewer's barber shop.

The Grand Jury in their presentment criticized the heating and ventilating systems of the Middlesex County buildings at London, saying they were inadequate. The sheriff's solution is to install furnaces. The present cost of heating the buildings is exorbitant, he said. It is as follows for last year: Jail $818.11, court house $461.06, county buildings $122.52, registry office $33.25, while $83.50 was spent for wood, making a total of $1,518.54. The sheriff thought it was not right to maintain such an expensive heating plant, when with a proper system the expense could be almost cut in half.

The Ontario Brass Rolling Co., whose extensive factory is at New Toronto, have completed the instalation of their new plant, though at present only a few men are employed, the whole of the plant not yet being in complete working order. The company will increase the number up to 50 hands. The furnaces for melting the copper and other metals in the manufacture of brass are on the extreme west of the building. The manufactured goods will be shipped direct to trucks of the G. T. R. from the east end. The works will be in complete working order before the end of the year.

Extensive improvements have been made to the offices and plant of the James Robertson Co., Montreal, since the fire, which practically gutted the place

some months back. A handsome entrance now leads to the offices, which are on the first floor instead of on the ground floor, as in the old structure, and are most conveniently arranged. The assembling rooms and shipping offices are now on the ground floor. In fact, the whole place has practically been rebuilt, and made, as far as possible, fireproof, with solid brick walls and fireproof doors between each building. The smelting of lead and brass has been removed across the road to a new building, thus doing away with the risk of fire to the main plant. The plumbing supply department will remain for the present in the building in Recollet St., which was taken for the purpose immediately after the fire. The whole plant is now running again, including the sheet lead mill.

New Harrison Baths, Toronto, Described in The Plumber and Steamfitter of November 15.

PLUMBER GETS NICE GIFTS.

David F. Anderson, of the plumbing firm of Anderson & Co., Fort William, was married on December 1 to Miss Annie Abdow, of the same city. The gifts were numerous and included a silver tea service inlaid with gold from the master plumbers of Fort William, a cut glass bowl from the staff of the Engineering Supply Co., Fort William, and a substantial cheque from the bride's father, Peter M. Abdow, merchant, Fort William.

Dave says he won't have to hang up his stocking this Christmas he has been treated so liberally on the occasion of his taking on a life contract with the girl of his choice.

PIPE THREADING HISTORY.

It ought to be very gratifying to all those who are interested or use pipe threading tools to know that we have in Canada, manufacturers of pipe threading tools, who are making a complete line of tools from ⅛ to 12 inches, with which one man can do all the threading that is necessary in these sizes, and tools that take right and left hand construction from ⅛ to 2 inches for hand use.

As far back as the instalation of pipe with threaded ends was adopted by the world as the best means of carrying water and the cheapest way of putting in service lines, there has been pipe threading tools made to put threads on pipe. The first dies made for this purpose were made of a solid block of steel, tapped out in the individual sizes, and put into a stock to hold same when threading pipe. The familiar trade name given these tools were "Solid Dies." Rapid strides were made in all lines of the plumbing and heating trade throughout the world, the first object being to give the world the best articles that could be made along scientific lines from a practical standpoint.

While everything else was advancing, there seemed to be no marked advancement in improving pipe threading tools from the original "Solid Die" principle. The manufacturers at last realized that it was due their business that some change be made in the way their dies were being manufactured, and this soon took the shape in the production of what is well known among the trade as the Two Part Die. This die was nothing new as far as the principle was concerned or the improvement in the working of the dies, but was made so that the die could be made adjustable for different size fittings by setting the two pieces forward or backwards as the case demanded, the manufacturers still maintaining that a separate set of dies for each size pipe was absolutely necessary for the best results to be obtained in threading pipe. It was later argued that two sets of dies were all that was necessary to thread any four sizes of pipe, but as before mentioned the principle of making the dies was not changed as the manufacturers contended that the dies must be made as thick through as the thread to be cut, the taper being in the dies and the length also, the adjustment being made just the same as with the two part die, namely that the dies be set forward or backwards to take bastard tapped fittings.

The reader who is acquainted with pipe threading tools will realize that so far there was no absolute improvement made in the manufacture of pipe threading tools as the die worked just as hard in the two part, or two sets of dies for four sizes of pipe, as it did in the solid block die, owing to the fact that the die had not been changed as far as the tapping was concerned. As a consequence the trade had to accept this as a fact and use the tools made for the purpose.

This principle of threading pipe lasted through forty or more years of the pipe threading industry, in fact, up until a few years ago, when an entirely new die principle was adopted by the makers of "Toledo & Jardine" pipe threaders. These dies were made in four pieces to a set, and instead of the die being made as thick through as the thread to be cut, were made with just enough teeth to do the work, or in fact very similar to lathe tools. The dies instead of being held stationary in the stock, are allowed to recede as you advance over the pipe, on tapered surfaces regulating the standard length of the thread as well as the standard taper. The dies throw the chips off in front of them as they are cutting, thereby doing away with any chance of the chips binding in the die causing the dies to work hard or strip threads. With these style tools, one man is all that is required to thread from ⅛" up to 12" pipe, where heretofore it took two men from 1" to 2" and four men from 2½" to 4", and the rest of the sizes of pipe from 5" to

12" had to be threaded by power in some shop where they had equipment for this kind of work. Now one man is all that is required to thread any size pipe in his own shop, and pipe users cannot help but realize what tools of this kind mean to them as far as the time, and perfect work is concerned, as they can have tools for any size pipe they wish to thread and can take them from place to place on outside work, being entirely independent of power equipped shops.

PIPE FLANGING MACHINES.

Under the title "Pipe Flanging up-to-date," O. N. Beck, M.E., London, Eng., has issued for circulation a pamphlet dealing with his all-steel flanging expanders. The "Universal," which up to now has met with unqualified success has some improvement features added to the new machines now turned out, and these are described in this booklet. The advantages of rolling the pipes solid into their flanges are fully appreciated for connecting-up high-pressure pipings for steam and water, etc. This method of making connections, however, was not generally adopted because until a few years ago there was no suitable machine made for the purpose. The "Universal" and "All-steel" expanders are made specially for this purpose and the 1909 improvements make them necessary machines where work of the kind described has to be done. A price list is included in the catalogue.

"IDEAL TRIPLEX" WATER HEATER.

A copper coil water heater for gas, which embodies in its construction scientific and practical features is the "Ideal Triplex," made by the Ideal Mfg. Co., Windsor and Detroit. The heater has a series of seamless copper coils incased in a heavy cast-iron jacket. The "triplex" circulator, around which the copper coils are wound consists of a brass hollow chamber, which throws additional heat to the coils. The "Ideal" water heater burner consists of two separate sections, each supplied with a gas valve. The water connections are made with brass pipes screwed into the "Triplex" chamber, no nipples being necessary. The jacket or casing is alluminized on the inside, as this prevents rust and reflects the heat. A door opens up the whole of one side, and being fitted with a sensitive catch all danger from explosion is removed. This heater is made in two sizes each with double coils. Exhaustive tests show this "Ideal-Triplex" combination as attaining a high state of efficiency and a saver of gas. Attached to the range boiler a continuous supply of hot water may be obtained.

MONTREAL BUILDERS' EXHIBITION.

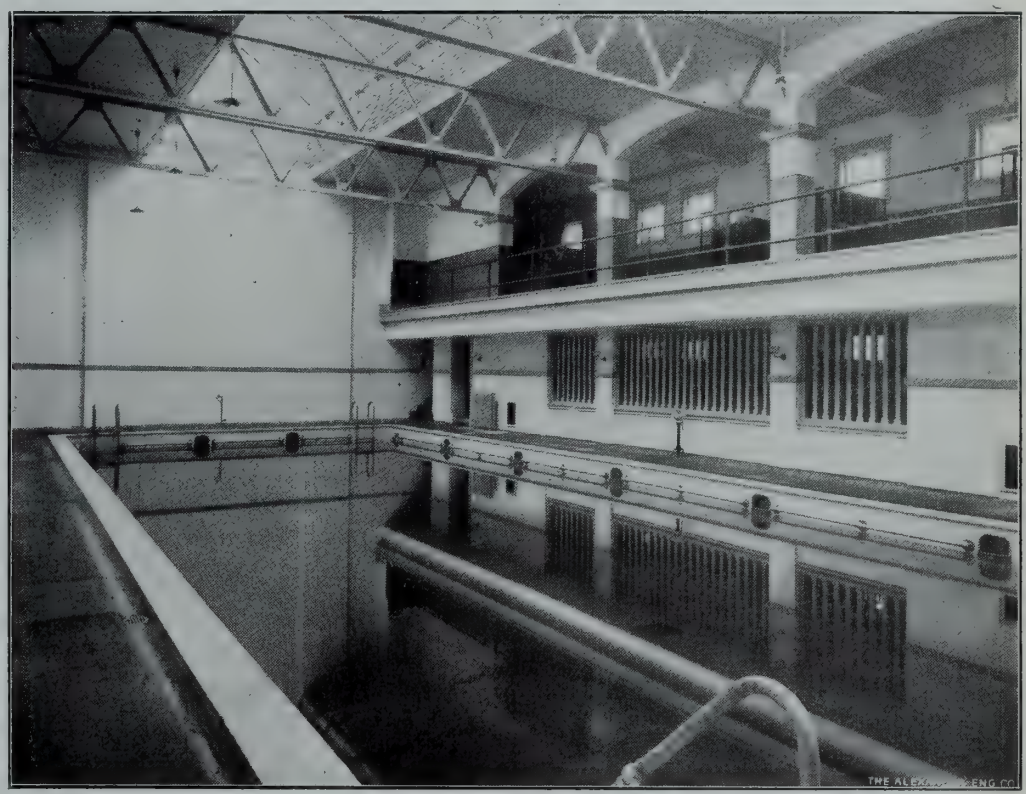
The permanent exhibition in connection with the Builders' Exchange, Eastern Townships Bank, Montreal, was opened on Thursday, December 9. The hall was nicely decorated, and the various stands occupied with displays from different firms catering to the building trade presented a very pleasing and business-like appearance. The hall covers about 4,000 square feet, and is thus large enough to show off the exhibits well.

This is the first effort which has been made to establish such an exchange in Canada. It is intended that the exhibition shall remain open to the public at all times during business hours in order that owners as well as architects and contractors may have a better opportunity of making selections of any supplies of which they may be in need.

Some 300 guests visited the exhibition during the evening. Supper was served, and musical selections rendered.

J. M. Arcand, president of the exchange, formerly opened the hall. He felt sure that the exhibition would be just what the building trade required. It would be easy for them now to inspect the different products when displayed as they were in the hall. He was very pleased to see so many present.

Among the firms who have taken stands are: Thomas Robertson & Co., Dominion Radiator Company, Taylor-Forbes, Limited, Warden King & Co., Martin-Senour Co., Dougall Varnish Co., Robt. Mitchell Co., Jas. Robertson & Co., U.S. Steel Products Export Co., and John Lysaght (A. C. Leslie & Co.)



Men's Swimming Tank in the New Harrison Baths, Toronto.

NEW LEAD TRAP DIMENSIONS.

The new standard price list on drawn lead traps and bends, which the Canadian manufacturers issued recently, and which was noticed some time ago in Plumber and Steamfitter, has evidently not been properly understood by all in the trade. The principal change in the new list from previous ones is that a new dimension scale for regular traps is inaugurated. Instead of ordering on inside or shorter measurements, the new scale shows the inlet and outlet measurements of the "full S," "¾ S," "½ S or P," "running" and "running Y" traps; the length over all of "bag" traps; and the measurement from the centre to the ends of "long" and "short" bends. The change was made to conform to the American list.

Plumbers when ordering traps and bends by the "old" scale should make sure about stating that fact, as otherwise the measurement will be taken to mean that the new scale is intended.

The new list, which has been issued to the trade, has a chart illustrating the new method of measuring the various kinds of traps and bends.

New Buildings, Water and Sewerage Systems

Opportunities Offered by Municipalities and Private Enterprise for New Plumbing, Heating, Ventilating or Sanitary Systems—Work Being Undertaken in Every Section of the Dominion.

Public Buildings.

A $10,000 post office is to be built at Chilliwack, B.C.

The public hospital to be erected at Oshawa will cost $20,000.

Niagara Falls new $50,000 armory may be erected next year.

A $20,00 armory is proposed to be built at Portage la Prairie.

A new hospital for Prince County, will be built at Summerside, P.E.I.

A $10,000 wing is proposed to be added to Royal Victoria Hospital, Barrie.

A special committee has recommended the building of a $30,000 hospital at Wetaskiwin.

Waterloo, Ont., is to have a new Grand Trunk station, which will be built within a year.

A new six-room Separate school to cost from $20,000 to $25,000 will be built at Brantford.

The Brantford school board has decided to erect a new separate school to cost about $25,000.

The Church of the Epiphany congregation have decided to build a new edifice at Toronto immediately.

Montreal city council will build a $10,000 residence at the corporation yards for one of its foremen.

Additions, to cost probably $50,000, will be erected to Ryerson and King Edward schools, Brantford.

It is stated that a Methodist church on the Glebe may be built next year by the Ottawa Methodist Social Union.

The Waterloo, Ont., Board of Trade endorse the proposition to erect a new market building there.

The Yorkton, Sask., school board are to erect a collegiate next spring at an approximate cost of $13,000.

The Presbyterian College at Saskatoon will begin building next April, if $50,000 has been collected by that date.

Queen Street East Methodists hope to erect a substantial new building in a more favorable location at Toronto.

A site for Yorkton's new $35,000 Collegiate Institute, to be erected next year, has been selected by the school board.

Architect A. E. Nicholson has prepared plans for additions and improvements to the Y.M.C.A. building at St. Catharines.

Plans for the new hospital at New Westminster are being considered this week. The cost will run from $75,000 to $125,000.

The contract for the erection of a Catholic schoolhouse at Montreal has been awarded by Architect Chas. Bernier, to Bouleu Bros.

Mr. Langevin, the lowest tenderer, has been awarded the contract for the erection of the new bath in St. Denis ward, Montreal, at $26,500.

Dumont & Maclean, of Riviere du Loup station, have been awarded the contract for the construction of the Rimouski armory at $8,450.

Municipal Undertakings.

A $4,000 water main will be laid at Welland.

A new main sewer will be constructed at Sackville, N.B.

Work is being pushed on Prince Rupert's waterworks system.

Fernie's new waterworks system from Fairy Creek, is completed.

Guelph's newly-constructed sewage beds are about ready for use.

A $40,000 waterworks system and a $20,000 sewerage system are proposed for North Vancouver.

By-laws to provide $16,000 for waterworks plant will be submitted at the next elections at Smith's Falls.

Victoria is making surveys relative to undertaking the construction of a waterworks system from Sooke Lake.

The installation of New Liskeard's waterworks connections is held up by the lack of the necessary fittings.

Wingham ratepayers will in January vote on a by-law to construct a waterworks system and a main sewer.

Vancouver is advertising for sealed tenders for the instalation of a sewerage system for Vancouver Heights.

St. Catharines water commission decided at a recent meeting to construct a second main from the reservoir to the city.

New storm sewers have been recommended at New Westminster, by City Engineer Blackburn. Estimated cost, $10,000.

The Canada Foundry Co., Toronto, at $630 was awarded the contract for steel pipe required for the Ottawa waterworks system.

Vankleek Hill proposes instaling a municipal waterworks system at a cost of $27,000, and a drainage system to cost $25,000.

Alterations are being made on the Elmira, Ont., waterworks system by means of which a duplicate system for fire protection will be available.

The Canada Foundry Co., Toronto, were recently awarded a contract for supplying water mains required for extensions at Orillia, at $34.20 per ton, f.o.b. Orillia.

The McKnight Construction Co., who have been awarded the contract for the installation of the sewers on Armstrong and Whitewood Streets, New Liskeard, have commenced operations.

Thos. Jackson & Son were awarded the contract for a sewer in McIntosh Avenue, Winnipeg, at a price of $1,613.55. The tender of the Canadian Fairbanks Company for the supply of hydrants at $37 each was accepted.

A by-law to authorize R. L. Pattinson to lay pipe lines for natural and manufactured gas will be voted, on January 3, 1910, by the ratepayers of Moore township, Lambton County, Ont.

At the meeting of No. 2 committee of the London city council it was decided to adopt the city engineer's suggestion and install a storm water sewerage system at the expense of $60,000, which will be raised by debentures if the people are agreeable.

The tender of Winnipeg's Engineer of Construction for the construction of the Clifton Street sewer there was accepted at $23,182.35. The Engineer of Construction also secured sewer works: in May Street, Nassau, McMillan, Chalmers Streets, and a water main in Poplar Street.

Despite numerous threats on the part of the Windsor Council, work on the Walkerville relief sewer is progressing rapidly. On the ground that to allow the sewer to empty into the river so close to the Windsor water works would polute the water used by nearly every family in Windsor, the matter has been referred to the Provincial Board of Health.

At a meeting of the Orillia fire, water, light and power committee, it was decided to lay 10-inch water mains from Mississaga to Colborne Streets, on West and Andrew Streets. It was also decided to lay an 8-in. main on Mississaga St. West, from O'Brien Street to beyond Douglas Street. This is the first of the Mount Slavin extensions. The contract for supplying the iron pipe was awarded to the Canada Foundry Co., at $34,20 per ton, f.o.b., Orillia.

The Hamilton sewers committee awarded the contracts for the building of the new sewers on Imperial and Arthur Streets, and the base line in the annex. J. J. Armstrong got the contract for constructing part of the sewers on Imperial and Arthur Streets, and Andrew Mercer was awarded the contract for constructing that part of the sewer on the base line. Thomas Williamson's tender of $1.325 to lay the iron pipe for the extension of the Ferguson Avenue sewer through the revetment wall was accepted.

Superintendent Madison, of Vancouver, has outlined to the civic water committee the 1910 programme for the extension of permanent city mains. The list covered 3.05 miles of 4-inch pipe, 8.26 miles of 6-inch, .46 mile 8-inch, and 2.20 miles of 12-inch. One hundred hydrants will be placed at street intersections in connection with the laying of the main and proper crosses and valves also placed and installed. The estimated cost of the work is $79,380, which is provided in the $400,000 waterworks by-law passed last month.

PLUMBING AND HEATING MARKETS

MONTREAL.

December 14.—The continuance of the open season and the pressure of contracts have made the building trade unusually active for this time of the year. Instead of quieting down for December building seems to have taken a new lease of life, and plenty of soil pipe is still wanted for immediate requirements. Supply houses, therefore, are extremely busy. It is certain that if the demand for material continues as active for the remainder of the month that this December will easily be a record.

There is no easing off in the pressure on soil pipe, radiators and boilers, and as fast as the stuff is produced it goes out to the trade. Jobbers are trying to put in some stock for next year, but with the demand as it is this is very hard and it seems probable that the spring will see a greater shortage in many lines than that experienced this fall.

As we said, soil pipe, radiators, boilers and in fact all lines are in very active demand for immediate needs, and not only is this noticed locally, but outside points are buying just as heavily comparatively speaking. With this activity there is naturally a very firm tone to all lines, and one hears very little about cutting. The boiler and radiator markets are keeping well together, and the trend is for higher prices next year.

There is no change reported in prices except an advance of ½c in half and half solder which is now 20c. There is a strong tone to the lead market generally.

SOIL PIPE—The great activity in the building trade, despite the time of the year has been reflected in the demand for soil pipe, and unusually heavy orders for December have been received. Soil pipe is still being put down. The demand is not only locally, but from outside points, and the present shortage seems to foreshadow a worse state of things next year. The market is firm, and we quote light 69, medium and heavy 70 off.

LEAD PIPE—In common with other lines lead pipe is in very active demand. The market is firm with a rising tendency. No changes are, however, reported and we quote: pipe and waste at 27½ off; traps and bends at 50; caulking lead, 5c per lb.

SOLDER—The firmness of the lead market has advanced the price of half an half, ½c, and we now quote 20c. Wiping is still at 18½c, but looks billed for an advance. There is a good demand from all classes of trade.

IRON PIPE—The market is firmer, and trade exceedingly good. Some heavy orders have been received from outside points. We quote: ¼-inch black, 63; galvanized, 48; ⅜ black, 59; galvanized, 44; ½ black, 69; galvanized, 59; ⅝ to 4-inch black, 71½; galvanized, 61½.

RADIATORS AND BOILERS — For December there is an unusually heavy demand for radiators and boilers. This is accounted for by the open season allowing building to be rushed and the pressure of contracts in builders hands. As fast as the parts can be assembled boilers and radiators are going out, and the trade is more than satisfied with the way things are shaping. In consequence the market is very firm, and there is much harmony as regards prices. We continue to quote: steam boilers: 60 and 10; hot water boilers, 50 and 10; wall and hot water radiators, 50 and 10; steam radiators, 50, 10 and 2½ per cent.

ENAMELWARE—There is a strong call for enamelware for immediate use, and stocks are naturally very short. The demand for high-class ware improves. The market is firm and unchanged.

METAL—There is a strong tone to the tin market, and jobbing prices are now at 44. Copper is up ½c, and now marked 14½c, while imported and domestic lead is at $3.70.

TORONTO.

December 14.—Since the opening of the month the plumbing supply houses report a quieter tone to the market, and a slower movement to sales. Enamelware continues to be the principal moving line, though even in that commodity there is an easing up noticeable. The quantity of enamelware articles going out is as numerous as ever, but manufacturers are catching up with orders and supply men, and master plumbers say they can obtain supplies much more readily than formerly.

With the exception of brass, which has advanced, prices continue unchanged, and generally speaking, there is a firm tone to market quotations. Fittings show a stronger tendency on paper, but the cuttings for business has anything but a strong tendency in reality. New business is hardly worth while, with the exception of some rush heating and plumbing jobs in the Cobalt region, Hamilton and Toronto. The Christmas season has put a damper on big selling. The year's trading has been of a satisfactory volume, and master plumbers think the season has been a good one.

ENAMELWARE—Cheaper grades of laundry tubs for basements of new residences are having a call, these weeks, and in general all enamelware lines are selling well. Particularly is this true of medium-sized boths, roll rim sinks and good grades of closet combinations. Shippers are just as busy as ever getting out orders, but manufacturers are catching up with demands, and supply men and master plumbers state they are able to get wantable lines almost immediately, which was hardly the case all summer and fall. Prices are firm at old quotations.

BOILERS AND RADIATORS—While the orders at present are of the "rush" variety, there is hardly the volume of business moving now that there was a month ago. Estimating on new work and calculating on prospects may be provocative of work later on, but the end of the season is in sight. The year was a very good one. Prices are unchanged. Hot water boilers and radiators are 50 and 10; steam radiators, 50, 10 and 2½; and wall radiators, 50 and 10.

BRASS GOODS—This is perhaps the only line which feels a stimulus by the Christmas season. Electroliers and chandeliers of good quality are in demand. In general brass work is at top notch. The market is strong. High-grade compression work is at 60 per cent. and standard at 65. Filler work is at 70 per cent. Brass rods and tubing have advanced about 2 cents a pound.

IRON PIPE AND FITTINGS—Conditions are unchanged from last issue There is a let-up in general demand, with whatever call there are at present being for the smaller sizes of pipe. The market quotations show strength, the discounts on malleable bushings and malleable lipped unions being now 65 per cent. It cannot be said, however, that there is any actual strength, for cutting for business is said to exist on fittings, especially owing to the lesser demands.

LEAD PIPE—Unchanged conditions and prices prevail. Pipe and waste are at 27½ per cent. discount; caulking lead holds well at the higher price, 4¾c a pound; traps and bends are still 50 per cent. This line seems to follow in strength the pig lead movement, which shows occasional fluctuations with a generally easier tone.

SOIL PIPE—The larger cities and the mining section of Northern Ontario are the especial customers now asking for soil pipe. Demand from the province in general is slow. Light pipe is 60 and fittings are 70 per cent.

SOLDER—Half-and-half, 18½c to 19c; wiping, 18c to 18½c, continue to be the ruling quotations. Demand is fair.

OLD METALS—Conditions and prices unchanged. Copper, 11c to 12c; brass, 6½c to 10½c, graded; and lead 3c to 3¾c.

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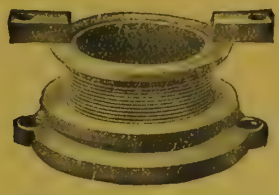

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